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ADDRESS ALL COMMUNICATIONS TO
THE EXCAVATING ENGINEER PUBLISHING COMPANY
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267 NATIONAL AVENUE MILWAUKEE, WIS., U. S. A.

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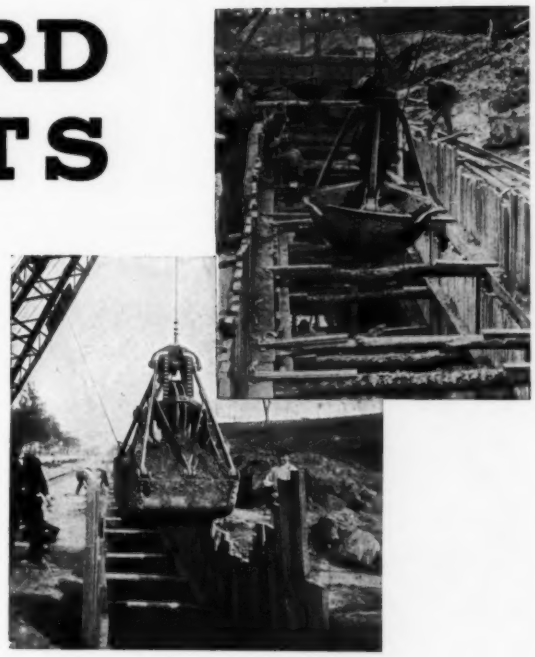

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Its THE time to buy Campbell Motors! There will never be another like it.

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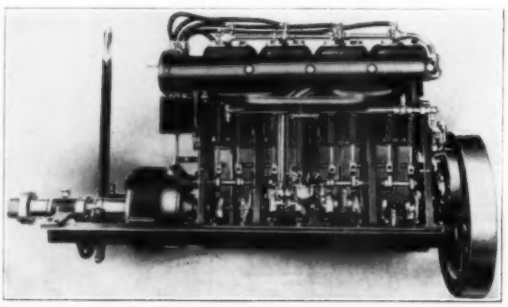

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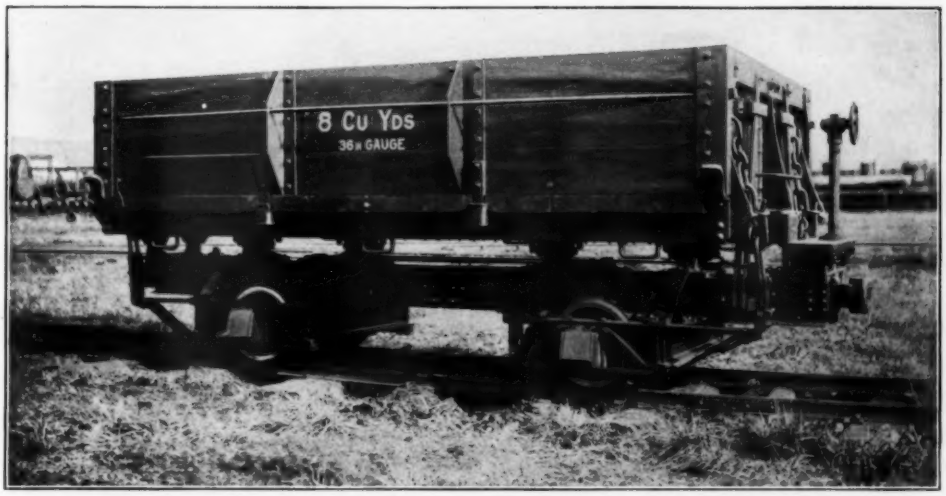

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EFFICIENCY, STRENGTH, DURABILITY are the three essentials of a satisfactory Dump Car. That BELLWOOD CARS have never failed to give complete satisfaction proves that these three essentials are all incorporated in their manufacture.

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Cutting them down to *one-fifth* or less of what they have been! How? With TROY TRAILERS, of course!

Mr. Robert W. Davis, County Engineer and Road Superintendent of Fayette County, Ky., (Lexington), made an address the other day before the Kentucky Highway Engineers in session at Louisville.

He mentioned the well-known fact that the ton-mile cost with teams has been established at between 20 cents and 30 cents.

Mr. Davis cited a certain typical day when the material hauled would have demanded fifteen teams costing $52.50. The truck-trailer train did it for $8.73. Not an exceptional—no! a typical day!

This bears a lesson not only for road makers but all who transport material over road or street.

TROY TRAILERS are *Trailers*—nothing else—they're not carts or wagons revamped, remodeled, rebuilt — no! They're *TRAILERS* from the first designer's sketch, to the last nut — planned, studied, worked out, experimented with, tested, perfected, proved right for this service and no other.

We are just in receipt of a letter from the above people stating they are working this outfit twenty-four hours a day.

Let us tell you what others are doing with TROY TRAILERS. Describe your own work and we will forcast what we know they can do for *you*. Write for Trailer Booklet 4-EE.

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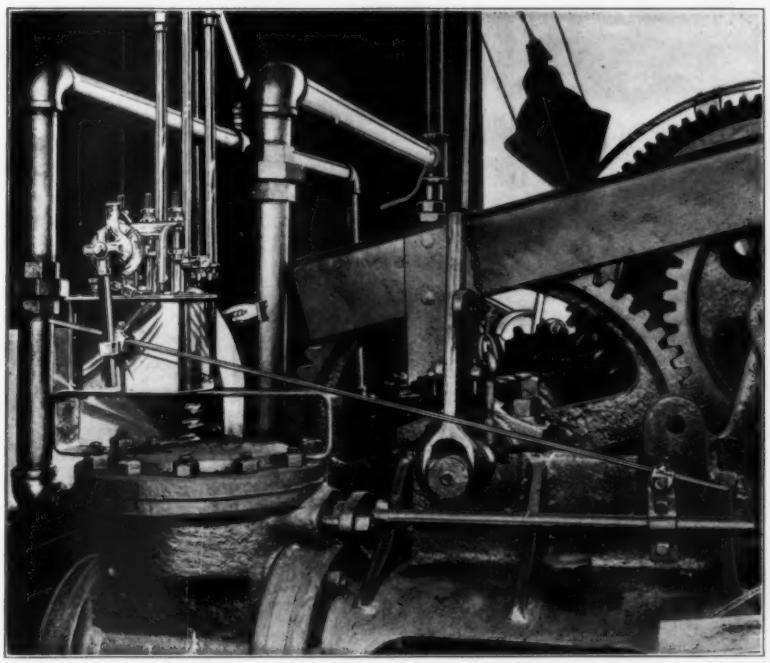

They may be had in any number of Feeds and Compartments with Heaters, without any extra charge.

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Feeding the screen, 26-feet above the ground. The boom is at an angle of 45 degrees. Note cars receiving the standard and undersize gravel. The pile in the foreground is oversize.

Class 9½, 1¼-yard Bucyrus dragline excavator digging the gravel. The water in the pit is the discharge from the washing plant.

General View of the Plant and Pit of the Von Ormy Gravel Company, at Von Ormy, Texas

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The Excavating Engineer

Vol. 12 DECEMBER, 1915 No. 3

Gravel Pit Operation with a Dragline Excavator

The Von Ormy Gravel Company has eliminated a belt conveyor by using a dragline excavator to dig their gravel and feed the hopper, 26 feet above the ground.

THE plant of the Von Ormy Gravel Company of San Antonio, Texas, is located at Von Ormy, Texas, about 15 miles south of San Antonio, on the International and Great Northern Railway. The unusual feature of this plant is, as described in more detail later, the use of a dragline excavator to dig the gravel and incidently to obviate the necessity of a belt conveyor.

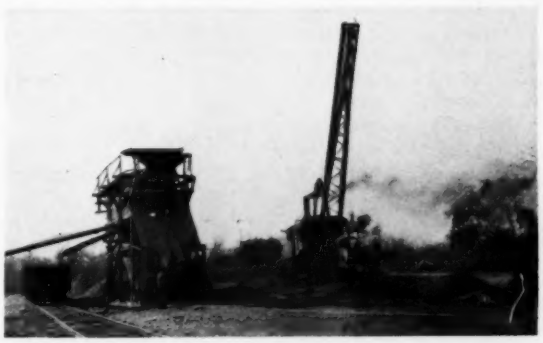
The property covers forty acres of land and the pit, at the present time, is about 250 feet long by 75 feet wide. The gravel, which is of an excellent quality, lies at an average depth of 23 feet and has no overburden to strip. The gravel is dug by a class 9½ Bucyrus dragline excavator, equipped with a 45-foot boom and a 1¼-yard Bucyrus-type bucket, mounted on skids and rollers. The dragline started digging about the middle of January, 1915, the first work being the construction of a spur track about one mile in length from the pit to the I. & G. N. line at Von Ormy. The cut was 22 feet in width, the excavation being handled from the bottom of the cut. This spur which is at a 2 per cent grade, very well ballasted, cost the company $9,000.00.

For work in the pit, the angle of the boom of the machine has been regulated in order to dump into the hopper 26 feet above the ground. The angle has been set at 45 degrees which allows a good clearance at the extreme height, as the view shows.

As stated, the ability of the dragline to make this high lift has obviated the necessity of a costly belt conveyor, to carry the gravel to the top of the screen.

The screen and washing plant are in one unit and are mounted on skids and rollers. The whole plant is moved ahead, as shown in one of our views, by means of a snatch block, the cable running from the plant through this block to the dragline bucket. The dragline, of course furnishes the power. The plant is moved 20 feet for every 1000 cubic yards of gravel, approximately. One screen is used, manufactured by the Alamo Iron Works of San Antonio. It is 22 feet long by 6 feet in diameter at one end and 4 feet at the other and contains four sizes of perforations, 2, ¾, ½ and ¼ inches. Its capacity is 50 cubic yards per hour.

A 30 H. P. Stover gas engine mounted near the ground level, drives the screen. The water for the washing plant is pumped from a creek 250 feet from the pit, by a No. 5 centrifugal pump with a 5½ inch discharge, driven by a 16 H. P. Atlas gas engine,



Plant about to be moved up. Note cable from dragline running through snatch block, back to plant.

manufactured by the San Antonio Machine Supply Company. The pump has a capacity of 500 gallons of water per minute. The pipe line is 5½ inches in diameter and at the time the photographs were taken, was 600 feet in length. The water, after going through the washing plant, is carried into the pit.

As the illustration shows, two tracks are placed parallel to the pit, and the cars are fed by spouts from the plant. One car receives the standard size, the other the undersize and the oversize is deposited in piles back of the plant, as the demand for this ize is not as great as for the other two.

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Dragline Acting as a Crane During the Repairing of the Plant

The average capacity of the plant is about 15 cars of gravel per day. The dragline, however, is never worked to its full capacity.

It is interesting to observe that the entire cost of this plant including the construction of the spur was about $25,000.00.

About six weeks after the plant was put into operation, an incident occurred which illustrates well the adaptability of the dragline. An accident made it necessary to take down the screen and repair it. As one of our photographs show, the bucket was taken off the dragline and the machine used as a crane, taking down the screen and replacing it after the repairs were made. The load was under perfect control at all times.

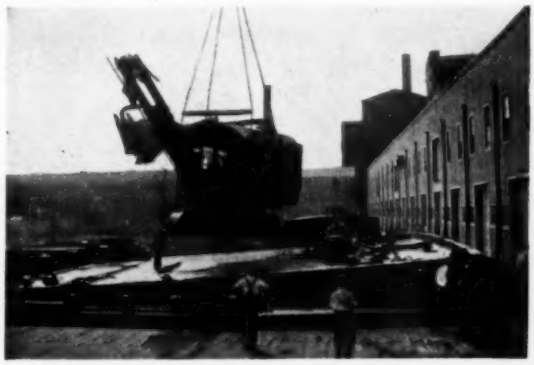
The plant was designed by J. P. Nelson, president and general manager of the company. His sons, Arthur and John Nelson, are superintendent and sales manager, respectively. C. B. Mason operates the dragline.

Mr. Nelson states that the dragline has given them splendid satisfaction.

1¼-Yard Bucyrus Bucket Filling in 14 Inches More than its Own Length

Lightering a Shovel Across the Hudson

The Thomas Crimmins Contracting Company of New York were recently awarded the contract for excavating for the foundations of a new building which is being built by The Aluminum Company of America in Edgewater, N. J. just across the Hudson River, at 125th St. New York City. The photograph reproduced herewith shows their 14-B Bucyrus shovel at the moment of being placed upon a lighter for ferrying across the river. The shovel was operated by Frank Armitage to whom we are indebted for the photograph.



Thos. Crimmins' 14-B Bucyrus About to be Lightered Across the Hudson

High Ore Loading Record on the Mesaba Range

The Roberts-Kingston Contracting Company have recently made an exceptionally high ore loading record at the Union Mine near Virginia, Minn. which they claim to be the record for the Mesaba Range. This record was made with one 70-ton Bucyrus shovel which loaded 96 cars of ore in 6 hours. As far as is known, the previous record for loading ore on the Mesaba Range was held at one of the Hibbing mines where 136 cars were loaded in 10 hours. Gregg Maxey operated the shovel and E. Martin was cranesman. A. J. Brown was superintendent in charge of operations. We publish herewith a photograph of this shovel and its crew.

Roberts-Kingston's 70-Ton Bucyrus which Loaded 96 Cars of Iron Ore in 6 Hours

Shallow Street Paving in Lebanon, Pennsylvania

How a revolving shovel successfully handled a cut running from one to eight inches of hard material.

THE Franklin Construction Company of New York have recently completed an extremely interesting piece of road grading in Lebanon, Pennsylvania. The interest from the excavating standpoint lies in the fact that a cut, varying in depth from one to eight inches, was successfully handled by a revolving shovel. The photograph herewith gives a very good idea of the general conditions encountered. The total width of cutting ran from 35 to 65 feet which the shovel

Showing how telegraph and trolley poles, trees and other obstructions necessitated loading wagons ahead of the shovel. 14-B Bucyrus loading a Studebaker dump wagon.

dug in cuts varying from 13 to 30 feet in width a piece, loading across the trolley car track. The difficulties which presented themselves consisted in the main in getting the dump wagons to the shovel in a convenient manner. On the curb side of the street, telegraph poles, trees, hitching posts and

14-B Bucyrus loading wagons by reaching across the trolley car track. Note how the boom had to be lowered in order to avoid trolley wires. This view also gives a good idea of the shallowness of the cut.

porches were constantly encountered, while on the other side a trolley car track prevented the wagons getting close to the shovel. Where the wagons were not loaded across the trolley car tracks, they were loaded ahead of the shovel. In addition to this, a long haul, amounting to about one mile, resulted in many delays. In spite of this fact, the shovel has been loading 93 wagons in 9 hours, the digging being not only shallow, but hard. The low trolley car wires necessitated the boom being lowered considerably, as the photographs will show. In fact in some places it was found necessary to tip the shovel in order to pass underneath.

Eagle and Studebaker dump wagons were used. In spite of the many difficulties the work was done in an extremely efficient and economical manner which was due to a great part to the ability of J. Albert Kruse, the shovel engineer, as it required a real expert to do this class of work efficiently.

The shovel used was a 14-B equipped with a $\frac{5}{8}$ cubic yard dipper.

The right side of the street has here been completed, and the shovel is going back on the left-hand side.

P. C. (to festive gent): "Now, sir, what's the trouble?"
Festive Gent: "I've lost me (hic) umbrella."
P. C.: "Why, it's hung on your arm, sir."
Festive Gent: "Sho it ish (hic). If you hadn't told me I should have gone (hic) home without it."—*Ideal Power.*

The attorney for the gas company was making a popular address. "Think of the good the gas company has done!" he cried. "If I were permitted a pun, I would say, in the words of the immortal poet, 'Honor the Light Brigade.'"

Voice of consumer from the audience: "Oh, what a charge they made!"—*Congregationalist.*

Difficult Excavation on the Sandusky River Improvement at Tiffin, Ohio

A ⅞-yard revolving shovel widens a river channel and makes high outputs under difficulties.

LOUIS Jones of Kansas, Ohio, has recently completed an interesting river improvement contract at Tiffin, Ohio. The Sandusky River at this point, has, in the past caused great damage to property and loss of life in its flood stages. This contract called for the straightening and widening of this river channel in order to prevent a recurrence of past rampages.

Louis Jones' 18-B Bucyrus excavating for the Sandusky River improvement at Tiffin. Note ridge of rock at the right and the water in which the shovel is working. Under these conditions this shovel moved 1176 cubic yards in 7 hours and 4 minutes.

The work included the excavation of 72,000 cubic yards of clay and rock and the removal of old concrete walls. The great amount of rainy weather experienced during the early summer, made the material wet, sticky and, consequently, very difficult to handle, and necessitated the shovel operating in from 6 to 18 inches of water. Despite this fact, the shovel, an 18-B, ⅞-yard Bucyrus, has made some extremely creditable outputs.

Work started on May the 14th. The shovel was erected under the supervision of J. F. Wolfe on May 10th and at noon of the 11th, was steamed up, ready to leave for the job.

The widening of the channel was accomplished by digging a new channel alongside the old one to an average depth of 12 feet to solid rock. A ridge was left between the two channels consisting of the rock and concrete walls which lined the old channel. This ridge was removed by the shovel when the new channel was completed and the rock and concrete loaded on flat-top wagons. Breaking the wall, made it necessary to operate in water about 2 feet deep. This was possible because of the rock bottom.

Two gasoline pumps were used to take the water away from the shovel while excavating the new channel.

Despite the above mentioned obstacles, the shovel loaded 1176 cubic yards in 7 hours and 4 minutes time. Mr. Jones reports that nine 2-yard wagons were loaded in 3½ minutes time in the presence of Rush McFarland, Engineer and William Heller, Director of Public Service of Tiffin. He also states that with ten 2-yard wagons working, the shovel loaded one every thirty seconds or 120 cubic yards of loose material an hour.

Twelve 2-yard Tiffin dump wagons were used in conjunction with the shovel, the haul being about 1,500 feet.

The excavation for the new channel under way The old channel may be seen to the left. Note the flooded pit.

Ten hour shifts were worked. The crew consisted of two men on the shovel and one in the pit.

The shovel was operated by J. F. Wolfe until the first week in June, when he was called away by sickness in his family. Mr. Wolfe was relieved by Ed. Collins.

Mr. Jones states that he has bought considerable machinery in his day, as a contractor, but he never has bought anything that has satisfied him more than this shovel. A good portion of the credit, however, for the successful execution of this job must be laid to Mr. Jones' able superintendence.

Digging a 48-Inch Pipe Trench Through a Busy Street

How a revolving shovel dug a 5-foot trench and how a 48-inch pipe line was laid despite heavy traffic and narrow quarters.

THE Beaver Engineering & Contracting Company of 100 Barrett Boulevard, Thompkinsville, Staten Island, have recently completed an interesting contract with the Board of Water Supply of New York City for digging a 5-foot trench, 4,093 feet in length and laying a 48-inch cast iron pipe line along Richmond Turnpike, Staten Island.

This pipe line forms a portion of that part of the Catskill Aqueduct leading from Narrows Siphon to the Silver Lake Tunnel and Reservoir in Thompkinsville. The contract is particularly interesting as it demonstrates how a revolving shovel may be sucessfully operated under conditions where the traffic is extremely heavy and the quarters very narrow.

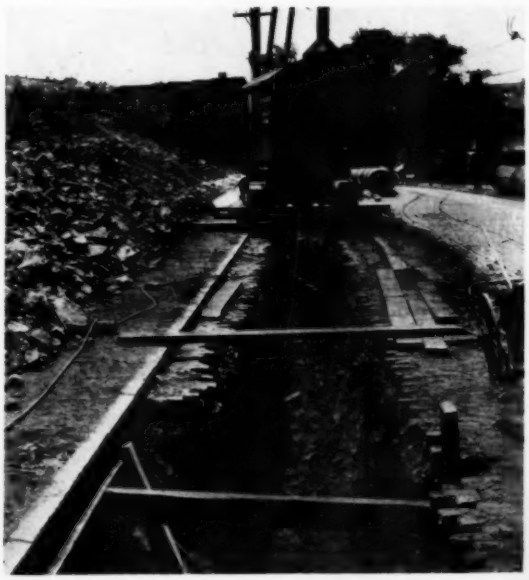
A brief outline of the difficulties will indicate what the contractor was up against. Richmond Turnpike is one of the busiest thoroughfares of the island. The trench which had an average depth of about 9 feet and an approximate width of 5 feet, was dug from 4 to 6 feet from the curb near the trolley car tracks. In order to prevent prohibitive delay in shovel operation, temporary cross-overs were used on each side of the shovel, so that the passing cars would not interfere with the shovel operation. In addition to this obstruction, poles, wires, trees and various structures lined the street for the whole distance of the contract. For 2,200 feet, there was a 4-inch water line for house and fire service. This pipe, of course, could not be interfered with and a temporary line had to be relaid along the ground, until a permanent line could be laid in the completed trench. A great many of the poles had to be removed and the trees were guyed back out of the way. Further difficulties were

An 18-B Bucyrus digging the trench. The 4-inch pipe line for house and fire service, mentioned in our article, was taken from the small trench shown ahead of the shovel.

presented in the disposition of the material, by the presence in the street of the 48-inch pipe, ready for being placed in the trench, and by the necessity of keeping this street open to traffic. Consequently, the excavated material was piled along the side of the trench or loaded into wagons and hauled to nearby storage piles where it was available for back filling.

The shovel used was an 18-B Bucyrus revolving type equipped with a ⅞-yard dipper and a dipper handle of sufficient length to dig a trench 12 feet deep. The shovel was mounted on traction wheels and was operated on platforms composed of 8 by 8 inch timbers, 16 feet long.

Three-fourths of the length of the trench was dug by this shovel, the final trimming being done, as usual, by hand. The balance of the distance where traffic conditions, treacherous soil, or hard rock made shovel work impracticable, was excavated by hand. The material encountered was, for the most part, clay with a considerable amount of sand, gravel, loam and disintegrated serpentine. The latter under ordinary conditions, would require picking or wedging, but it was removed with little difficulty by the steam shovel. For a short stretch light blasting was found necessary. A large part of the excavation, however, had to be made through a granite block



18-B Bucyrus shovel digging a 5-foot trench along Richmond Turnpike, S. I. for a 48-inch pipe line. This view shows the character of the material handled and also the pavement which had to be ripped up.

The method of lowering the 48-inch cast iron pipe into the trench.

pavement with cement or asphalt filled joints over a concrete foundation. The blocks were removed by hand and were saved for future use. The concrete foundation was removed by the shovel, but to assist in its removal and to prevent undue breakage, three rows of 1-inch holes about 8-inches apart, were drilled along the line of the trench. The rows were spaced one in the center, and one on each side of the trench.

It naturally was impossible for the shovel to make rapid progress under the above described conditions. A fair average progress during an

8-hour day was 90 lineal feet or about 142 cubic yards in the disintegrated serpentine, and 105 lineal feet or about 165 cubic yards where easier digging was encountered.

Under favorable circumstances, the shovel averaged about 150 lineal feet per day in both classes of material.

According to the estimates of the engineer, the average cost was 44 cents per cubic yard. This included fuel, oil, repairs, wages, storage charges, depreciation, interest, etc.

The 48-inch pipe sections weighed about 5 tons each. They were brought to the work on motor trucks and were lowered into the trench by means of a 5-ton chain block illustrated in one of our views. One truck averaged 14 pipes per day, about 105 ton-miles at a total haulage cost of $0.65 per ton or $0.43 per ton-mile, including all charges incidental to trucking. Unloading and handling at the destination amounted to $0.10 per ton additional.

The Engineering Record recently published an article written by Mr. Frederick H. Pond, Assistant Engineer of the Board of Water Supply of New York City, describing this work. From this article we obtained some of the above figures.

Building the Ashby Reservoir for the City of Fitchburg, Massachusetts

Revolving shovels used for the excavation of the dam sites and in borrow pits to obtain material for the rolled embankments. How difficulties were surmounted.

WORK on the City of Fitchburg's new storage reservoir was completed on November first of this year. This reservoir, known as the Ashby Reservoir, has a capacity of 700,000,000 gallons of water. The work comprised the construction of two dams, 1,200 feet long with concrete core walls, earth rolled embankment and a spillway at each dam. The total excavation amounted to 100,000 cubic yards. The contract called for the completion of the work by July 1916, but the contractors, the E. W. Foley Contracting Corporation of New York, succeeded in completing the work on November first of this year. Work was started on April 15th.

Fig. 1—One of the borrow pits from which the clay for the rolled embankment was loaded showing the 14-B Bucyrus shovel loading 4-yard Western narrow-gage cars. This material was for the most part, composed of greenish brick clay requiring blasting.

The preliminary work consisted in clearing and grubbing the site for the reservoir which was heavily wooded. This was done for the most part by hand, a greater portion of the stumps being blasted by dynamite and a few pulled by teams and a block and fall device. The remainder of the preliminary work consisted in the construction of a mile and a half of new highway.

The excavating equipment consisted of one Bucyrus 14-B revolving shovel with a ⅝ cubic yard dipper and two Thew shovels. One Thew was used on the highway work and the other on the embankment for the north dam. The Bucyrus was employed for the most part in borrow pit excavation and in clearing the foundation for the north dam. It was also used for digging an old rubble masonry dam formerly used to store water for mill purposes. The Thew shovels handled 30,000 cubic yards apiece and the Bucyrus 40,000 cubic yards. In excavating for the foundation of the north dam, quick sand was encountered which made it necessary to excavate from 30 to 36 feet in order to secure a satisfactory foundation. This quicksand was excavated by digging a sump and lowering the water table in advance of the foundation excavation. It was necessary to sheathe this with 6 by 8-inch oak timbers and brace it thoroughly. The material was hoisted in buckets by a cableway operated by a Lambert hoisting engine.

At the south dam the excavation was made difficult on account of the occurance of hardpan and boulders. This was drilled by jackhammer drills and blasted with 60% dynamite. No timbering was necessary.

Fig. 2. Dumping the embankment clay into a hopper from which it was distributed by teams.

The concrete core wall shown in photograph No. 3 was built in advance of the rolled embankment. Satisfactory sand for concrete was found on the reservoir site and crushed stone was secured from boulders encountered in stripping the area for the earth-fill dam.

The rolled embankment was constructed of the very best material that could be found, which consisted of a greenish brick clay which required blasting. The drilling was done by hand with churn drills; F. F. black powder was used. This material was loaded by the steam shovels from borrow pits and hauled by 10-ton American locomotives in 4-yard Western cars, a distance of about a half a mile over narrow-gage track. This material was dumped into hoppers and distributed by teams in layers as shown in figure No. 2. The embankment was rolled with Buffalo-Pitts 10-ton road rollers.

The shovels averaged about 8000 yards per month, the Bucyrus making an output of 500 cubic yards per 8-hour shift on its best days. When the material was not blasted ahead of the shovel, this output was cut down by approximately 100 cubic yards per day.

The paving of the upstream site followed the blasting of the embankment. This is illustrated in figure No. 3. Soil was placed on the top and down stream sides of both dams and was seeded with grass seed and winter rye.

Fig. 3. The core wall completed and work being started on the paving of the rolled embankment.

On the top of each dam there are to be built 12 by 12-foot brick gate houses.

The plant was moved to the Ashby Reservoir about eight miles over ordinary country roads. The rails being hauled by a 3½ ton Alco motor truck, as were the 4-yard dump cars. The most interesting, however, was the method of hauling of the locomotives. Mr. Foley devised a tire rolled out of ⅞ inch boiler plate, 10 inches wide, clamped over the wheels of the locomotives, which made it very simple to haul them to all parts of the work by steam rollers used as traction engine. The steam shovels were also on traction wheels and were assisted by the steam rollers.

The work was done by the E. W. Foley Contracting Corporation of New York under Ernest E. Lothrop, City Engineer for the City of Fitchburg, J. D. Savage, Resident Engineer and Thomas C. Sheldon, Arthur A. Train and Frank H. Foss, Board of Water Commissioners. Metcalf & Eddy of Boston were the consulting engineers.

We are indebted to H. M. Clifford of the E. W. Foley Contracting Corportation for the above information.

The Excavating Engineer

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Bradlee Van Brunt, Manager and Editor

267 National Avenue Milwaukee, Wis., U. S.

Construction Outlook

Throughout the past month the same steady improvement in industrial conditions has been in evidence which we commented upon last month. The most encouraging sign is the continued increase in railroad buying. The financial condition of the railroads is undoubtedly improving. Even in the South where the barometer has been the least favorable we see indications of improvement. The cotton situation which was in a critical condition at the start of the war seems to have revived and now appears most encouraging. Banks record a healthy increase in clearings and reports from all over the country show a steady improvement in building operations. A prominent railroad official has recently made the statement that the railroad business has so far improved that he believed the improvement would soon mean that an increase in extensions would be necessary.

Of course the approach of the closing of the contracting season has resulted in a falling off in work actually let, but we continue to see a steady increase in prospects.

Progress Towards Uniform Boiler Laws

As we advised in our September number, a new organization has been formed for the purpose of furthering uniform boiler laws. This organization is called the American Uniform Boiler-Law Society. Contractors will undoubtedly appreciate the importance of this movement. Considerable progress has been made, but much remains to be done. For some time all eyes have been directed on the state of Massachusetts, as this state is the pioneer in the formation of boiler rules. In this direction some advance has been made. As interpreted by the Massachusetts Chief Inspector, Mr. Luck, the attitude of this state towards the Code is very friendly. Although it seems impossible at the present time to contemplate a double standard for Massachusetts and for the admission of Code boilers, the differences between the two Codes which now remain are very small and will undoubtedly be overcome in the near future. Should Massachusetts be brought into the line, a great impetus will be added to the movement throughout the United States.

The Cascadas Starts Digging

The new 15-yard Bucyrus dipper dredge, the *Cascadas*, started digging on the slides in the Panama Canal, Sunday the 31st of October. The *Cascadas* left Philadelphia in tow of the tug *M. E. Luckenbach* on the afternoon of September 27th, arrived at Cristobal on Thursday October 21st and was towed through the canal to the north end of the cut on the following day. The dredge arrived at Cristobal three days in advance of the date set on the basis of a 27-day voyage.

As soon as the *Cascadas* arrived, work was started on day and night shifts removing the temporary hatches installed for safety during the sea voyage and reassembling the dismantled parts in preparation for actual digging. The manufacturers were represented by Mr. Thomas Jardine who directed the construction of the dredge throughout.

According to the Canal Record, the *Cascadas* will increase the capacity of the dredging fleet at the base of the slides by about 25 per cent. The other two 15-yard Bucyrus dipper dredges, the *Gamboa* and the *Paraiso*, have been doing, roughly speaking, slightly over half the excavation up to the recent activity of the slides. This percentage has undoubtedly increased recently.

This new dredge is similar in general features to the *Gamboa* and *Paraiso*, but has a considerably larger hull and different arrangement of the forward spuds and a spare boiler in the main battery. The house is arranged to accommodate a larger crew and the dredge is built with cranes and a permanent machine shop.

· FIELD NOTES ·

QUESTIONS pertaining to the operation, maintenance or repair of excavating machinery will be answered through this column. Address, Field Note Department, Excavating Engineer, P. O. Box 607, Milwaukee, Wisconsin.

Method of Moving Large Draglines

The scheme described below has been adopted by the Winnipeg Aqueduct Construction Co. for moving their class-14 Bucyrus dragline over soft muskeg. (*See article in November Excavating Engineer.*) A strip of 4" x 5/8" strap iron has been spiked to the center of both the front and back edges of all pads or platforms. When it is necessary to move ahead, the bucket is swung around and lowered so that the teeth catch under the pad which the machine has just passed over. The strip of iron thus protects the edge and prevents it from being gouged out. A direct pull on the drag line will cause the machine to move up without any difficulty. The original skids on the class-14 have been replaced by a solid piece of 10" x 18" timber 30 feet long aid flat and shod with a ½ inch plate. This makes a lower and wider skid bearing area. These wider skids were found necessary after the machine has passed through a stretch of muskeg 12 to 15 feet deep. This muskeg was so saturated with water that when water pockets were encountered, they would gush out in front of the machine into the trench breaking the muskeg back at times as far as the center of the machine. These gushes would frequently flow for a short while as thick as a man's body. The decision to put on the broader skids was arrived at after a 1¼ inch steel cable had been broken in attempting to pull the machine out.

Raising Swinging Jack Arms

Contributed by V. A. Loomis, steam shovel engineer C. B. & Q. Ry., Arminto, Wyo.

Below is given a simple method of raising swinging jack arms in order to set them in position. Place across the circle a rail or heavy timber 12 feet long, let one end reach out over the jack arm which you wish to raise, chain the other end down so that it will not raise up. Four men and a pair of tripple blocks can handle the jack arm with ease and set it in place.

Blasting Hints

What to Look for in Loading Sprung Holes

In loading sprung holes in vertically stratified rock, it sometimes happens that what is known as a divided pocket is made. That is, the hole will branch like the letter "Y" inverted and part of the charge goes into one pocket and part into the other, and the two may not be connected by a continuous layer of explosive. The bottoms of these pockets may be several feet apart and one pocket may be left unexploded. There is a large element of danger in this, as the unexploded powder is liable to cause an accident when uncovered by the steam shovel. To prevent this occuring, frequent inspection by a mirror, when possible, may discover this condition and the carrying of the load well up into the hole will usually result in connecting the two pockets. It cannot always be detected, but by allowing the charge to rise one-third at least of the height of the hole, unexploded pockets may generally be avoided.

The inspection of drill holes during drilling, cleaning and loading is done by throwing sunlight by means of a small pocket mirror down into the hole, and by its use, obstructions may be detected and the rate of filling up can also be noted.

—Du Pont Magazine.

An Interesting Method of Pulling a Steam Shovel Up a Slope

The photograph published herewith was contributed by Mr. K. M. Boorman of the Keystone State Construction Company of Philadelphia who are the contractors for the Hill View Reservoir and portions of the Yonkers and Van Cortlandt siphons on the Catskill Aqueduct. The view illustrates an interesting method which was attempted

Pulling a 30-Ton Steam Shovel up a Slope

successfully last Fall of pulling a 30-ton steam shovel up a two to one concrete slope from the bottom to the top of the banks of the Hill View Reservoir on contract 30 of the Catskill Aqueduct. To steam shovel men this view will speak for itself. It may be observed, however, that the cable which was run through a set of blocks attached to a dead man at the top of the slope was passed through two sheaves at the bottom and two at the top and was of course lead to the hoisting drum of the shovel. The shovel pulled itself up the slope.

UMI

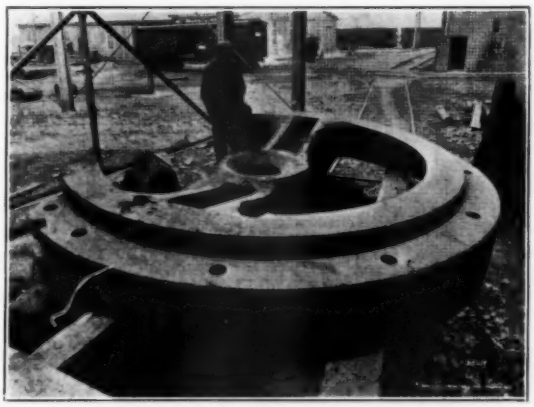
DEVICES YOU OUGHT · TO KNOW ABOUT ·

The Largest Oxy-Acetylene Job Ever Accomplished

Following are the facts in connection with the repairs made to a thirty-ton cast iron spider for a gyratory stone crusher. This is probably one of the largest if not the very largest oxy-acetylene job ever successfully accomplished.

This spider, a portion of which is shown in the photograph, was cracked and broken at the hub. In this condition, of course, it was useless and would have cost the quarry about $2300.00 for a casting to replace it, irrespective of the time lost.

The section shown weighed 60,000 pounds and the complete spider, which includes the segiment not shown in the picture, weighed 80,000 pounds.



30-Ton Spider Repaired by Oxy-Acetylene Process

The casting was brought into the Oxweld shop in Chicago and required an entire flat car to carry it.

After the crack and break were chipped out, the opening was so large that it required more than 900 pounds or nearly one-half ton of new material to be welded in.

The welding was done continuously in shifts of two men each for sixty hours before the job was completed and all of the welding was done while the hub was burried in a charcoal fire to take care of expansion and contraction.

A temporary brick furnace was built about 7 feet square and 4½ feet in height. In this was built a charcoal fire to preheat the metal and after the welding was finished, the whole part was covered with sheet asbestos and the material was allowed to cool off gradually.

This was a very interesting welding job; one which saved the quarry hundreds of dollars and much valuable time. The work was done by the Oxweld Acetylene Co., of Chicago.

Asbestos Metallic Brake Blocks

In response to a long felt demand for braking material that would overcome the natural limitations of woven materials, the H. W. Johns-Manville Company have placed on the market a material known as J-M Asbestos Metallic Brake Blocks.

In producing this product all the requirements of heavy duty brakes have been kept clearly in mind and the result is a hard tough homogeneous solid, which is dark gray in color and fibrous in structure.

The coefficient of friction and gripping power of this material is such that it affords perfect braking control and its hardness is such that the wear on the brake facings and the block itself is extremely slight.

As an example of how the material stands up under wear, it is interesting to note that J-M Asbestos Metallic Brake Blocks installed on a heavy duty coal hoist showed a wear of four one hundredths inches after five months of service. Wood blocks used lasted a few days.

The material is absolutely uninflammable and frictional heat has no deteriorating effect on its structure nor will it throw off incandescent particles such as is common when wood blocks are employed. It is uneffected by oil, water or climate conditions and will not burn or char.

This material is furnished in all shapes for use on brakes and clutches generally and can also be furnished in any special shapes desired.

Unconquerable.

(From the Kansas City Star.)

The habit of never being whipped, of always keeping up the fight—that is the quality of the great leader. The man who never admits defeat is the man the world has to take into account. Time and again the foes he is fighting may think they have him down. But before they know it he is on his feet sounding the advance.

Such a man molds events. He helps create the new heavens and the new earth of the prophet's vision.

A mighty force of the universe is the unconquerable soul!

Bridegroom—"Waiter, I hope you haven't told anybody here we are newly married?"

Irish Waiter—"No, sor; Oi've kept it a secret. Why, whenever anybody tries to pump me, sor, Oi've told them you weren't married at all, at all!"—*London Mail.*

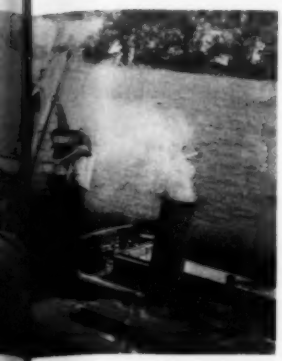
20213

The Crow Contracting Company's class-14 Bucyrus dragline excavator mounted on caterpillars. The machine is shown climbing a 12½ per cent grade on a rough field near Mount Pleasant, Tenn.

The Norfolk & Western's second-track work [illegible] mead, Va., and middle-track construction from [illegible] Va. A Bucyrus shovel loading [illegible] K 80,000 cubic yards is to be [illegible] mu

Heavy excavation on Cut [illegible] 30 Hi Catskill Aqueduct, near [illegible] boulders in the foreground wer the Bucyrus shovel. There i cubic yards of ma[illegible] work job on which two shovels have been w ing since 1915.

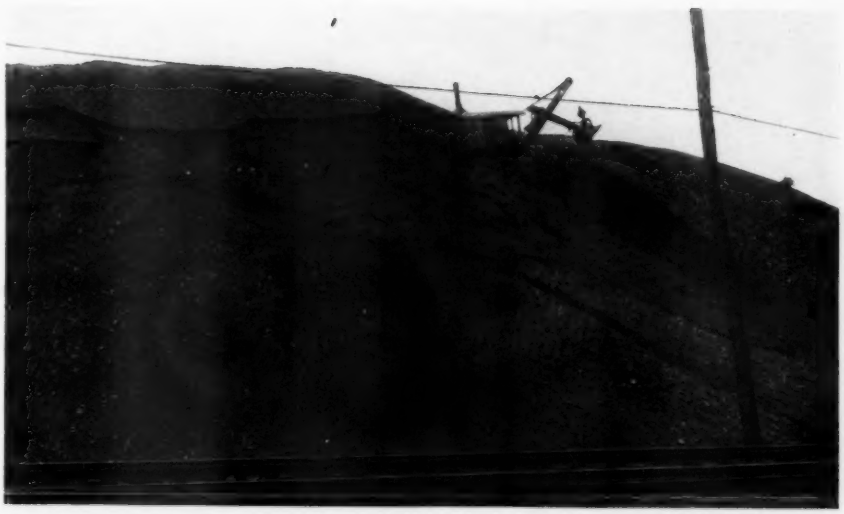
Constructing canal embankment in connection with the Deerfield River power development in Massachusetts. A 60-C Bucyrus steam shovel at work near Monroe Bridge. Despite very rough country and extremely cold weather the Power Construction Co., completed, what would ordinarily be a 2-year job, in a little over 8 months. Work was under the direction of Geo. W. Bunnel, president.



ork between Pembroke and Ripple-
from Pembroke to Walkers Creek,
K & J cars near Ripplemead.
much of which is heavy rock.

The Midvalley Coal Company's 14-B Bucyrus shovel with a ¾-cubic yard dipper, picking up a culm bank at Hazelton, Pa. The shovel is averaging about 630 cubic yards per 9 hours, loading cars.

30 Hill View Reservoir,
nt Yonkers, N. Y. The
progress were overcast by
ere is 2,900,000
of rock work on this
which two 70-ton
have been work-
since 1910.



Before the Lehigh & Wilkes Barre Coal Co. adopted this method of handling their culm banks at Audenried, Pa., the danger of sliding banks was considered sufficiently serious to prevent the use of a revolving shovel. This view shows how an 18-B Bucyrus solved the problem. It dug its way up a 14 per cent grade to the top of this pile which contains about a million tons of culm. A cut for a dinkey track will be dug 10 feet below the summit. The culm is dumped at end of the bank and carried by sluices from the base to the washer.

SHOTS FROM THE · FIRING LINE ·

Arizona

Yuma—Mesmer & Rice, 231 Marsh-Strong Bldg., Los Angeles, Cal., were low bidders for the construction of 16 miles of concrete pavement at the following prices: Excavation, 30c; concrete in culverts, $18; concrete in pavement, $5.60; oil and screening surface, 8c per square yard; a total of $125,200.

Yuma—Bids that were received for constructing Highway Contract No. 2 have been rejected by city engineer. Work comprises about 17 miles 2-inch macadam surfaced with 4-inch cementing gravel base, 16 feet wide.

Arkansas

Corning—The contract for constructing 57 miles of ditches has been awarded to the Northern Construction Co., Elkhart, Ind., at $116,330. This will include 1,526,000 cubic yards of earth work and 116,500 cubic yards of embankment for levee.

California

Bakersfield—The contract for constructing Division 11, Section 2, California-Kernville road has been awarded to Castro & Blaisdell, at $12,158.95. This will include 48,000 cubic yards excavating, 35.5 cubic yards concrete, 382 feet 12-inch, 324 feet 18-inch, 129 feet 24-inch and 138 feet 36-inch corrugated iron pipe.

Riverside—The contract for grading 8.96 miles of highway on Route No. 8 has been awarded to Conner Contracting Co., 709 Higgins Bldg., Los Angeles, for $61,825.

Oakdale—The contract for the construction of concrete lining for canal and tunnel for South San Joaquin Irrigation District has been awarded to Edward O'Malley, 821 Fillmore street, San Francisco. Work is to be done on a cost plus 10% basis, with the guarantee that the work in the tunnel shall not cost more than $12 per cubic yard and the work in the canal not more than $8.

San Francisco—Lowest bid for constructing 3rd section of beach esplanade was submitted by C. Lamburth at $49,900.

Sacramento—State highway commission will receive bids until December 6th for construction of 12 miles of concrete highway between Dixieland and El Centro, including 50,000 cubic yards excavation.

San Joaquin—Directors of the South San Joaquin Irrigation District have decided to call for bids for $450,000 worth of 5 per cent preferred issue reservoir bonds for the purpose of at once constructing the Woodward reservoir.

Doyle—The Southern Lassen Irrigation District has retained Wm. L. Wales of Woodland as engineer. County Board of Supervisors held a meeting on November 8th to declare the district and call an election. The district comprises 21,500 acres in the southern end of Honey Lake Valley.

Paradise—Petition for creation of water district will be presented to supervisors at their December meeting. County surveyor M. C. Polk has reported that the cost of system using either Little Butte Creek dam-site or Doon site will be about $116,500.

Richmond—City trustees have engaged J. H. Dockweiler, Grand Bldg., San Francisco, as engineer to report on water-supply question.

Arcadia—Lowest bid for constructing approximately 16½ miles oil macadam roads and approximately 10,000 feet concrete curbs and gutters was submitted by J. L. Frazer, Long Beach, Cal., at $113,250.

Bakersfield—I. L. Miller, clerk of board of supervisors, will receive bids for grading and constructing culverts on Division 11, Section 3, Caliente-Kernville road until December 9th. Will be about 2.1 miles long. Certified check 10 per cent required.

Bakersfield—I. L. Miller, clerk of board of supervisors, will receive bids for paving and constructing culverts on Division 5, Section 1A, Bakersfield-McKittrick road until December 9th. Will be about 2.1 miles long. Certified check 10 per cent required.

Contract for constructing tramway from Spanish Ranch to Gray's Flat, about 6 miles, has been awarded to United States Steel Products Co. by the Spanish Peak Lumber Co., Quincy, Cal.

Riverside—Lowest bid was submitted by Conner Contr. Co., Higgins Bldg., Los Angeles, at $61,825, for grading 8.96 miles county highway on Route No. 8.

El Centro—Contract for constructing sewer system has been awarded to James Kennedy, 900-901 Washington Bldg., Los Angeles, at $206,199.10. Will include 28 miles 8, 10, 12 14, 16, 22, 27 and 33-inch pipe.

Modesto—Contracts for irrigation work in Modesto Irrigation District have been awarded as follows: C. W. Richards, Oakdale, at $33,539, for No. 1; Barret & Hilp, San Francisco, at $6,209, for No. 2, and Peart Bros., La Grange, at $2,500, for No. 3.

Oxnard—City engineer S. C. Bennett of Oxnard has resigned to take a position as field engineer for the Ventura county highway commission.

Riverside—B. R. Davisson Construction Co., Monrovia, Cal., was the only bidder and was awarded the contract at $11,473 for grading 13 miles of roadway on portion of Route No. 18 including the following approximate quantities: 14,800 cubic yards excavating, 10 cubic yards "A" concrete, 30 cubic yards "B" concrete, 10 cubic yards culverts, 5 cubic yards "C" concrete, 50 feet 12 to 24-inch pipe, 30 feet 30 to 72-inch pipe, 500 pounds reinforced steel, 50 feet guard fence, 20 feet pipe rail, 900 square yards rock pavement and 12,250 square yards dis. gran. surface.

Bakersfield—Robert Sherer & Co., P. E. Bldg., Los Angeles, was the lowest bidder and will be awarded the contract at $13,464,54 for constructing bridges and culverts on Division 10, Section 7, Bakersfield-Mojave road, a distance of 3.07 miles.

Ventura—C. E. Black of Ventura was awarded the contract at $19,992.19 for grading and constructing culverts on the Santa Ana road along the west side of Ventura River, north of Foster Park, a distance of about 1½ miles. The excavation amounts to 82,350 cubic yards.

San Francisco and Vicinity

By E. C. Hingston

Peart Bros. of Oakdale and Modesto have been awarded a contract by the Modesto Irrigation District for reinforced concrete core wall and dam facing and expect to start work in a few days. The contract amounts to about $72,000.00.

Mahoney Bros., San Francisco have been awarded a contract by the Oakdale Irrigation District for lining one of their tunnels near Oakdale and are starting to work on it November 10th.

UMI

John H. Wynne, of the American Locomotive Co. has been a visitor in San Francisco during the past week. Mr. Wynne visited a number of his old friends as well as making a number of new ones. He is winding up their exhibit at the Fair and is particularly interested in disposing of the engines on exhibit. I am glad to see Mr. Wynne looking so well and to hear his encouraging predictions about the business we are to enjoy in the future both in the east and the west and certainly trust that his predictions will come true and that he will not absent himself for so long a period from this territory.

The writer visited the work of Mr. Joe Lacey near Nelson, Cal. Joe has a shovel out on the prairie trying to make dollars out of adobe, but he does not find it all such easy sledding as he at first thought but we are glad to know that Joe is sticking to the job and will come out on top of the heap in the end and will be in line for something good in the spring.

Daniel Bayles has a large team outfit, an elevating grader and two caterpillar tractors on his irrigation ditch near Nelson and is moving dirt all along the line. He certainly keeps the teams showing up on top of the levee in clock work fashion. This is what counts when there is dirt to move.

There are not very many large pieces of work being executed at this time, although there are quite a number of small jobs on which numerous contractors are kept busy. All the large contractors have no difficulty in keeping their small equipment busy owing to the number of irrigation projects and State and County highway work, but the large equipment is lying idle and contracts of large proportions will be welcomed by owners of heavy equipment. General business conditions are brighter than they have been for some time past. Some of the pessimestic ones are looking for a slump after the close of the Fair. This may effect some lines of business slightly but it is not looked upon to effect the general business to any marked degree.

Los Angeles and Vicinity

By G. H. Hutchinson

John H. Wynne, works manager, Montreal Locomotive Works, whom many of our contractor friends know, arrived in Los Angeles November 5th. Seemed peeved we didn't meet him with a brass band. John alone is to blame. He wired he would arrive on the "Owl." Instead he came in on the "Lark." Frankly admitted he didn't know much about either bird, and couldn't tell the difference between the two, although there is two hours difference in their leaving time in San Francisco. What happened at the other end will remain unwritten history.

Well, we were glad to see him anyway, even if he did upset the whole weather bureau. He hadn't been in town four hours before it started to rain. The first we have had in six months. We don't mind people visiting us who are on the water wagon, but do object to them splashing it all over the natives. We were speechless when John said he would take ginger ale. Think he will need a diving suit to get out from under what he got away with.

After he got about four he reminded us of the Irish cop who arrested a man that stuttered. The next day the judge after listening patiently to the man trying to get it out of his system, turned to the cop and wanted to know what he was charged with. "Be Jazes, I think he is charged with soda water." Now here comes the strange part of it all. John tells us Frank Renwick, Forrest Fordham and Charlie Reese are still good friends of his.

John left for San Diego on the night train. Before going he left with us some good stories that we will pass along but not through the Excavating Engineer.

J. H. Maxey was in from Gila, Arizona recently. States by the first of the year he will have the railroad to Ajo finished. Jim had on his war paint. He has promised us a warm reception when we come to Arizona. Every paper in the state evidently had seen the October issue of the Excavating Engineer, copied the article and added something to it. So far it has cost us a dinner and several highballs.

Shovel sales in Los Angeles are like the boy that was fishing when we catch the two that are nibbling and three more we will have five.

C. R. Butterfield would have finished up his contract this week at San Pedro if the rain had kept away two days longer.

Harry Quincy and Fred Sienknecht are in town after putting in all summer on a Bucyrus 18-B owned by Harry Hudson, who has just finished up 11 miles of state highway in Ventura County. Some very hard material was encountered, and was excavated without shooting.

E. E. Vanderhoef, superintendent of Nevada Consolidated Copper of Ruth, Nevada, wife and daughter, have spent a few weeks on the Pacific Coast taking in the expositions at San Francisco and San Diego, stopping en route several days in Los Angeles.

Van has had several years of very strenuous work in connection with the copper company and thoroughly enjoyed a much needed rest.

He left Los Angeles on November 2nd by the steamer "Harvard" for San Francisco and told us before leaving that he was afraid to stay any longer as he might be compelled to pay excess on himself as we heard he gained about twenty pounds while here. His weight at the present time is somewhere between two and three hundred pounds.

The family also increased somewhat in weight while here, which probably accounts for the front axle breaking on a machine in which they journeyed from Los Angeles to San Diego. The disabled machine was abandoned and the party was picked up by a passing machine in which several blow outs occurred before the journey was completed. Aside from a delay of four or five hours due to the break downs and a delayed dinner of about four and one-half hours the party enjoyed themselves.

Canada

Montreal and Vicinity

By B. St. John

While the prospects of any new work being let in Canada for next year are very slim, contractors in general are optamistic regarding the future. Practically all of those interviewed feel that Canada will come in for an exceedingly good time after the war is over. They feel that the Government will make every effort to supply work for the returning soldiers and also for the people which we expect will come here from those parts of Europe which have been devastated by the war. The logical conclusion is that some of the large schemes, such as canals, harbour improvements, railroad branch lines, etc., which have been held up owing to the war will go ahead as soon as it is over. A large number of construction men have gone to Europe with the Canadian Overseas Railway Construction Corps. Five hundred expert railway construction men left here recently for Russia and we expect there will be calls for more men in the near future.

A great many of our railway contractors have turned to other lines of business and are now interested in the manufacture of war munitions and it is expected that when construction works is resumed there will be a great many new firms in the business.

L. A. Ott & Co., are about to close down their Quebec Battlefield improvement work at Quebec and will finish it in the spring. Mr. Ott advises that he may secure another job this winter on which he can use his plant.

Jones, Girouard & Co. Limited will not commence their track filling on the Intercolonial Railway until next spring. I understand that their work on culverts is progressing favorably.

Foley Bros., Welch, Stewart & Fauquier are doing splendid on their Ocean Terminal contract at Halifax. This job is well worth a visit by contractors or others interested in this class of work. The equipment which they have on the work is very suitable for such a job.

Poupore & Dexter have received their "Hold-Back" from the St. John Valley Railway after a long wait, consequently Joe and Cecil are wearing the "smile that won't come off." We would respectfully suggest that they salt some of it, as the winters are long and cold in this part of Canada.

Winnipeg and Vinicity

By J. A. Coyle

A. R. Mann of Northern Construction Company is in the city from Vancouver on a business stay of about a week or ten days.

D. R. Campbell who has been in charge of construction for Mackenzie, Mann & Co. for Canadian Northern lines, has been appointed general superintendent of Canadian Northern Railway, with headquarters at Vancouver, B. C. in charge of all lines west of Edmonton.

Mr. Campbell's many friends will wish him every success in his new position whilst regretting having to remove his headquarters from Winnipeg.

Contractors on the Greater Winnipeg Waterways, Winnipeg Aqueduct Construction Co., Thos. Kelly & Sons, and Tremblay-McDiarmid Co., expect to shortly close down all construction for winter months. Big progress is anticipated by the different contractors on this work during the season of 1916.

J. W. Porter, chief engineer of the Hudson Bay Railway, anticipates fast progress in grading and track laying next year on this line. Many problems and difficulties have been experienced in bridge-building on this work which are being met and overcome. The Hudson Bay Construction Company have contract for this work, in which company J. D. McArthur is mainly interested.

Notes from the Welland Canal

By J. G. Beck

Work has finally started on the building of the much talked about Toronto union station, which, when completed, it is hoped and believed, will be second to no railway terminal on the American continent in the way of conforts and conveniences for the traveling public. Final arrangements have been completed with the Bank of Montreal for providing the funds necessary to allow the work to go forward and the construction of the new building will therefore proceed at once. The contractors, P. Lyle & Sons Construction Co., have already been instructed to proceed with the work and operations started on September 26th. It is expected the excavations and foundations will be completed during the ensuing winter, the building ready for the steel workers March 1st, 1916, ready for occupation in 1917 and finally completed in 1918. The construction work is under the general direction of J. R. W. Ambrose, chief engineer for the Toronto Terminals Railway Co. W. T. Griffiths has charge of the construction, being superintendent for the contractors.

We understand our old friends Chas. R. Stein & Leon W. Reade are going into the gravel business, at Bowmanville. The new concern which will be known as the Darlington Gravel Co., Ltd., capitalized at $40,000.00, has recently been incorporated. We trust that business will boom for the new company to such an extent that they will require a second class-45 Atlantic shovel in order to get out material enough to fill orders. Go to it boys, we are for you strong!

The Canadian Ry. & Marine World says: that a comparison of the tonnage and number of vessel passages on the Welland and Panama Canals, for a six months' period, shows the following: —Welland Canal, 3,314 vessel passages; 3,484,327 total tonnage Panama Canal, 496 vessel passages; 2,367,244 total tonnage. The average tonnage per vessel passage through the Welland Canal is 1,050, while that through the Panama Canal is 4,770. On the completion of the Welland Canal, vessels of a considerably larger type than can be used at present will be able to pass, of course with correspondingly larger cargoes, so that though a decrease in the number of vessel passages may be looked for, the average tonnage will doubtless be considerably increased.

Mr. Yale and Mr. Reagan of Chicago are spending a few days on their job on Section No. 2. "Huck" tells us that they have only about two months' work left for the shovel, so we take it that "The Firm" are doing a "little scout duty." They are not going to have that Bucyrus 70-C idle if it is possible to find anything for it to do. There is still quite a little material for the class-20 dragline to handle, trimming slopes and cleaning up.

Jas. Corbett & Sons who have the sub-contract for dry excavation of Section No. 5, under the Canadian Dredging Co., are getting along very well with their part of the work. They have moved in the neighborhood of two and a quarter million cubic yards of material to date, December 1st, and expect to have the remaining 250,000 yards cleaned up by the latter part of February. Mr. Martin, engineer in charge, tells us that the average of their shovels has never run below 27,000 cubic yards per shovel any month since they started operations and in July of this year they excavated with five shovels, 225,000 cubic yards or an average of 45,000 cubic yards per shovel.

Notes from Vancouver

Edmonton, Alta.—Work is now under way on the branch line of the Edmonton, Dunvegan & British Columbia Railway, from Spirit River, Alta., to the Grand Prairie settlement. J. Timothy is the contractor. The route is from Spirit River settlement, thence crossing Burnt River and Bad Seal River, and via Lake Cleremont to Grand Prairie City on the Beaver River, 60 miles. The maximum grade will be 1 per cent and the maximum curvature 6 deg. The only difficult work on the line will be at the crossing of Saddle Montain. The grading work is about 60 per cent finished, and is expected to be completed by December of this year, and track laying will be completed early in 1916.

Vancouver, B. C.—The C. N. R. has provisionally accepted the tender of A. G. Creelman & Company, Vancouver, for the sea wall, which will be constructed as part of the terminals' plan at False Creek. Work, it is understood, will be started at once.

Vancouver, B. C.—The harbor commissioners have applied for a permit for their reclamation scheme on the mud flats under the Granville St. bridge, whereby some 42 acres will be prepared for industrial sites. The estimated cost of the scheme is $195,000. The work will be carried out under the supervision of Mr. C. C. Worsfold, resident Government engineer, and will be accomplished by means of a system of creosoted wood piling.

Vancouver, B. C.—Sir William Mackenzie, president of the Canadian Northern Railway Company, stated that five tracks each 1,000 yards long, are to be constructed on the east side of the company's False Creek concession, and that construction work will commence at once.

Vancouver, B. C.—Following upon a favorable report from the city engineer, the board of works approved of the Harbor Board's plan for a causeway connecting their proposed reclamation scheme with the mainland.

Vancouver, B. C.—Tenders will be invited in a few days by the Canadian Northern Pacific Railway for the erection of temporary buildings to be used for freight and passenger purposes pending the installation of the permanent facilities at False Creek.

Vancouver, B. C.—Mr. F. W. Peters, general superintendent of the British Columbia division of the C. P. R., has announced that the Kettle Valley Railway has leased from the former line its Nicola Valley branch, in order to facilitate the operation of the completed portions of the Kettle Valley Line.

Victoria, B. C.—Foundations for the main building of the new observatory have been completed and a water reservoir constructed.

New Westminster, B. C.—The second unit of the North Arm jetty, which is being constructed by the Marsh-Hutton-Powers Company, is about half completed and the contractors expect to finish it about February.

R. F. Hayward, general manager and chief engineer of the Western Canada Power Company, and chairman of the Vancouver Branch of the Canadian Society of Civil Engineers, attended in person the monthly meeting of the Society in Montreal on October 7th and read a paper on "The Stave Falls Power Development of the Western Canada Power Company, Limited."

Port Nelson, Man.—About 1,000 men are engaged on the harbor work. Three large dredges are deepening and straightening the channel, and extending the harbor basin. Wharves have been built this year and considerable progress made on the railway terminals. It is expected that the harbor facilities will be completed by the time the first train over the entire line reaches Port Nelson. This is expected to occur next September. Practically the whole line has been graded and over 200 miles of steel laid. Track-laying has been somewhat delayed this season, however, owing to a number of sink holes.

Geo. E. Graham, formerly superintendent of District 2 of the British Columbia division of the Canadian Pacific Railway, and for the past two years general manager of the Coquitlam Terminal Company, has been appointed general manager of the Dominion Atlantic Railway, a subsidiary line of the C. P. R., operating in the maritime provinces and eastern states. Mr. Graham was formerly with the C. P. R. as superintendent of terminals and elevators at Fort William, Ont.

John Stocks, formerly deputy minister of public works for the province of Alberta, is a member of a new Public Utilities Commission appointed by the government of that province.

There are at the present time something over 7,700 miles of the Canadian Northern lines in operation in various parts of Canada, with another 1,250 miles ready to be thrown open for traffic. With the opening of this additional section a continuous line of railway will be operated by the company between Port Mann and Quebec.

Calgary, Alta.—Tenders are being called for digging and back filling approximately 3,200 feet of ditch for water pipe and the laying of approximately 1,700 feet of 6-inch and 1,500 feet of ½-inch water pipe.

Lethbridge, Alta.—The Canadian Pacific Railway has decided to commence at once and rush to completion an additional 25 miles of track eastward from Foremost, on the Lethbridge to Weyburn line. The additional 25 miles will bring this line to a point 10 miles from Lake Pakowki.

Fort McMurray, Alta.—The opening up of the new northwest is making progress along other than railway and agricultural lines. The Dominion Government has been petitioned to establish wireless stations at Fort McMurray, at Fort Chipewyan, Fort Smith, Fort Vermilion and Smith's Landing, to connect these points with the present government telegraph line operating south from Fort McMurray. Improvement of navigation of the Athabasca River between Forts McMurray and Chipewyan by removing sand bars, installing buoys, and maintaining suitable wharfage at various points, is agitated, and the improvement of harbors and river entrances also appear to be urgently needed. The entrance of the Alberta and Great Waterways Railway is expected to greatly increase the freightage of the northern towns.

Calgary, Alta.—The Milk River irrigation project, which is being developed by the Dominion Government with Mr. F. H. Peters, commissioner of irrigation, in charge, will embrace nearly 2½ million acres. It will be a canal proposition throughout, involving several large dams and other structures. The sources of water will be the Milk, St. Mary's and Belly Rivers. The engineers of the Irrigation Department are at present working on the scheme.

Alberta—The village of Peace River Crossing has been empowered to borrow $5,500 for sidewalks and Nelson R. M., to borrow $10,000 for roads, etc.

Calgary, Alta.—The irrigation engineers of the Canadian Pacific Railway are undertaking extensions into the Taber district, a part of the company's irrigation block. Preliminary work, including topography, hydrography and cost of proposed ditches, is being proceeded with.

On the Alberta and Great Waterways Railway the end of steel is now about Mile 140, or 25 miles northeast of Lac la Biche. The remaining distance to Fort McMurray is 150 miles and of this distance less than 5 miles remain ungraded.

Greenwood, B. C.—The British Columbia Copper Co. proposes to spend in the neighborhood of $500,000 in the erection of a concentrating plant at their Copper Mountain properties. This is to be operated by an electric power plant to be erected either at Princeton or Coalmont, according to reports, it being estimated that it will take at least $300,000 to erect and equip same. Oscar Lachmund is general manager of the company.

Kootenay Landing, B. C.—W. H. Stevens, syperintendent of the Dominion Government telephone service, has announced that he has received authority from Ottawa to proceed with the construction of a line from Kootenay Landing to Creston.

Nelson, B. C.—According to an announcement made by Fred R. Wolfle, president and general manager of the Florence Mine, construction work will start soon on a 200-ton daily capacity concentrator, a hydro-electric power station and compressor plant, together with extensive underground development to cost not less than $150,000.

Hope, B. C.—The Kettle Valley Railway has been completed between Hope and Ladner Creek. Over the latter a steel bridge is being constructed.

Port Moody, B. C.—The ratepayers passed a by-law by which the city guarantees the bonds of the Port Moody Steel Works Company to the amount of $100,000. Work on the construction of a steel plant and rolling mills in D. L. 233, will be commenced immediately.

Prince George, B. C.—Grading has been practically completed on the Pacific Great Eastern Railway from Vancouver, and steel is being laid this fall from Clinton to Squamish, a distance of 167 miles. Construction is well advanced on the bridges and regular trains will probably be put into service between Squamish and Clinton before the close of the year.

Colorado

Denver—The plans of readjustment for the reorganization of the Denver & Rio Grande Railroad which were made public at the recent annual meeting of stock holders of this road, disclose the fact that it is planned to issue $10,000,000 of new first mortgage bonds, the proceeds from which will be used partially for the construction of branch lines and structures in southern Colorado

and partially for making standard gauge, some of the present narrow gauge trackage.

Denver—The new cut-off highway between Denver and Cripple Creek by the way of Sedalia Deckers-Springs and divide, has recently been opened for traffic. This new road cuts off about 40 miles from the Colorado Springs road to Cripple Creek. The distance between the two towns is now reduced to 85 miles.

Canon City—The Canon City and Saladia cut-off of the Rainbow route from Coropaxi from Parkdale, has recently been opened. This is 21 miles, the road blasted for the most part through monntain sides. The work was done for the most part with convict labor.

Notes from Denver

By H. N. Steinbarger

Denver's growth and prestige as federal capital of the west were enhanced a short time ago when central headquarters, with supervision over the entire intermountain district and Kansas and Nebraska, were established in this city for the division of public roads, irrigation and drainage of the United States department of agriculture. From these headquarters the work of the division formerly carried on in nine different states will be directed.

Fred M. Crane of Omaha has his dragline outfit pretty well set up ready for work at Ft. Laramie, Wyoming. His contract is two schedules of the Ft. Laramie Unit of the North Platte Project of the Reclamation Service. He expects to get well under way before winter sets in. Mr. Crane is an ingenious individual having constructed his own draglines, using equipment that satisfies his particular demands. He has been successful, and it is understood that he has quite a number of good machines at work and at his storage plant. As time for completion of this unit is limited, we trust he will get in some good licks before freezing up time. G. A. Payne is the superintendent in charge of this work. He has had a vast amount of experience and will undoubtedly make a fine record.

John Young of Young & Crook, Denver, is home. Their contract on the Burlington Railroad Guernsey, Wyoming to Wendover, Wyoming, cut-off having been completed. When John arrived the population of Denver was considerably increased,not so much in numbers, but in quantity. The Young & Crook job was undoubtedly one of the most successful ones on the line. They built two long tunnels and struck what might be termed pay dirt, because it was ripped out at the rate of 28 feet per day for a long period, These tunnels are standard size 18 feet by 25½ feet. One tunnel, now known as "Sunset" tunnel, the name given by Young & Crook, and adopted by the Burlington railroad, lies at such an angle that for about a three day period on June 21st, 22nd and 23rd, the sun as it sets shines clear through the tunnel. During these days the past summer while they were taking out the heading of Sunset tunnel no artificial light was needed during the evening, as the sun light was even brighter than the electric lights used ordinarily. We venture to say that nowhere in this country and possibly in the world can be found a tunnel so situated.

The Knowlton Construction Company of Denver has taken a contract for 250,000 yards of machine work on the Ft. Laramie Unit of the North Platte Reclamation project. Their contract includes all of the machine work for both the main contractors the Fred M. Crane Company of Omaha, two schedules, and the Winston Brothers Construction Company, Minneapolis, two schedules. Knowlton has moved a large outfit on to the job. including elevating graders, dump wagons, and a complete plant. Harry Knowlton is on the job all the time and is getting some good licks in before the snow flies, and it freezes up, at which time work will be shut down for the winter, on account of specifications preventing the handling of frozen earth. This concern has been busy continually for several years on Reclamation work, being idle for any short periods between contracts. Most of the work has been done in Colorado and Nebraska.

It is understood that Winston Brothers Construction Company are moving two heavy Bucyrus dragline excavators, one a 4-yard, machine on to their work at Ft. Laramie, Wyoming. They have two large schedules of the Ft. Laramie Unit of the North Platte Reclamation Project. W. O. Winston, Junior is in charge of the entire contract. They made a very good record with their draglines on the Grand Valley Project of the Reclamation service, during the past two years, excavating material that has never, as we understand it, been undertaken before. An even better record is anticipated on the Ft. Laramie work.

Jim Davies, Denver, pitch club has opened its doors for the winter campaign. They haven't all the old members lined up as yet, so are inveigling some new comers to take a hand now and then to the sorrow of the new members. Young, Conover, Barker, Davies, and others opened up the season on the 13th inst. By the way the 13th is lucky for Jim and John. Here's hoping that full membership will be in attendance in the near future. At present some of the members are now engaged in more lucrative occupations. It is not desired that they cease their efforts to gather in the lucre because that will be needed in the pitch club, as well as for other purposes. If conditions continue as at present undoubtedly all members will be on hand in the near future.

There is a great deal of agitation in the entire intermountain section in the interests of a highway connecting all National Parks, The Good Roads Enthusiasts, State Highway Commissions. County Commissioners, and general public are very much interested. A number of the present highways will be utilized and closing links constructed, which will make it one of the greatest systems in the world. If the present plans are carried through there will be a system of roads 3500 miles in length, so that one can motor without interruption over some of the best highways in the world, visiting the Rocky Mountain National Park in Colorado and the Yellowstone National Park by way of Cody, Wyoming.

Mendenhall, Bird & Company of Springville, Utah, have been awarded contract for construction of schedules one and two of the Ironstone canal, which is a part of the Uncompahgre Valley Irrigation project in Colorado. The material to be handled is approximately 100,000 cubic yards of earth, and contract price is in the neighborhood of $30,000.

Clark & Hasselman, contractors of Pueblo, Colorado, recently secured a contract from the North Sterling Irrigation District for rip-rapping their large dam with about 40,000 cubic yards of rock. Herman Hasselman has visited Denver a number of times lately, purchasing considerable equipment for use on this contract. It is expected that the yardage will be doubled before the contract is complete. All rock will have to be quarried, transported into tipples, thence into barges, and floated to the dam. It is a considerable contract and is very important work. When completed it will make the North Sterling dam one of the best in the country.

Threet Brothers & Jolley, Lovell, Wyoming, have been awarded contract by the Reclamation Service for excavation on the First Unit of the Frannie Division, Shoshone Project, Wyoming. It calls for the excavation of about 360,000 cubic yards of material. There is also about 120,000 cubic yards of overhaul. It is understood the contract price is in the neighborhood of $76,000.

R. M. Lynn of Lovell, Wyoming was awarded contract for second unit of the Frannie project. The amount of material has not been reported at this writing, but the contract price is in the neighborhood of $27,000. These concerns have both done considerable work (in the neighborhood) on the Shoshone project and other projects in Wyoming and Montana, being specialists in that class of construction.

Hamilton & Gleason have taken an additional contract for light grading of terminal yards at Wendover, Wyoming. This

will about finish the Guernsey, Wyoming, to Wendover, Wyoming, Burlington railroad, on which they have been at work on a heavy section for the past year. They are working their New Era elevating grader, dump wagons, and big string of teams. G. W. Hamilton takes a run into Denver every now and then in his big new motor car, and let it be known that he "goes some" over the country roads, up hills and through most anything that is encountered. His new car has approximately a horse power of 80, and will climb most anything but a tree. His foot which was crushed and broken several months ago is mending fast, and we have an idea he will soon be driving his own car, for he never feels quite satisfied with anyone else at the steering wheel. Bobbie Hamilton has some big news to tell all his friends, and believe us he is telling it, because he is one of the proudest men in seven states. He is so blooming proud that he is all puffed up. Ask him about it, for he is not too much so to be willing to talk volumes about the biggest event in his life.

John Olson of Denver has a contract for a large irrigation proposition on the Apishapa River in the Arkansas Valley, Colorado. This proposition has been hanging fire for several years, but has been fully financed and the work is now under way. We anticipate it will have a very good effect on the irrigation line of development in this territory.

District of Columbia

Washington—Wm. F. Cush is making good progress on his contract for the New Interior Dept. Building, here. This is a sub-contract under the John H. Parker Company of New York City. The contract calls for the excavation of 150,000 cubic yards. The work is between 18th and 19th, and E. and F. streets N. W. The equipment consists of one Bucyrus 70-ton shovel, one Marion model-28, twenty 1½-yard dump wagons, thirty Kilbourne & Jacobs 4-yard dump cars, three 14-ton and two 18-ton Vulcan locomotives. The dump is situated one mile from the job. There is a spur at each end of the line with a passing track about the center of the line. The dump is at the New Lincoln Memorial Building, and the material is being used in order to make a fill around this building for a terrace. It is expected the contract will be completed by January, 1916.

Georgia

Macon—The work of razing the various buildings on the site of the new Macon depot, has been practically completed and excavation work has probably started by the time this issue reaches its readers. J. Henry Miller of Baltimore has the contract for the station proper. The contract for the Southern Railroad approaches has not as yet been let. This will amount to upwards of $100,000.

Macon—The Central of Georgia Railway are building extra side tracks between here and Atlanta. Two Bucyrus shovels are being operated on this work.

Idaho

Pocatello—The contract for constructing 58 miles of state highway from Power County line through Cassia County to Twin Falls County line has been awarded to J. J. Carroll, Boise, Idaho, at $37,000.

Illinois

Chicago and Vicinity

By Forrest Fordham

C. C. Huestis was in Chicago on the 14th inst. He is just starting his Bucyrus class-14 dragline on some drainage work at Meredosia, Ill. and expects to finish the work within the next three months.

Mr. Huestis has just commenced to ship coal from his new mine at Carbon, Ind. He is using a Bucyrus 150-B steam shovel for stripping a fine deposit of Brazil block coal and reports prospects good for the coming season.

Mr. Millner of the Roy-Millner Coal Co. was in Chicago on November 17th and says that the demand for dead coal in the Pittsburg district is very brisk due to the increased zinc production occasioned by the high price of that metal.

N. C. Ffolliott, Nat McDougall and other members of the firm of A. Guthrie & Co., have been in Chicago recently in connection with the contract awarded their company on Section 14 of the Calumet-Sag Canal. Mr. Knox will have charge of this work and they are making preparations for starting it immediately.

Lockport and Vicinity

By Geo. T. Dowse

Yale & Reagan have completed their 16-mile sewer contract for the city of Lockport. This work was started last March.

The excavation was through rock, gravel and hard clay. The trench was 18 inches to 3 feet wide, 6 feet to 28 feet deep through the city. The outlet runs into the Desplaines River under the old canal. The work was under the supervision of engineer Calkings of Joliet and superintendent Frank Yale of Yale & Reagan. Frank says he has kept in the middle of the road all summer and expects to go home and get acquainted with his family. Good luck and lots of horse shoes go with you, Frank! This contract finished gives Lockport one of the finest sewer systems in Illinois.

The Joliet Flux Stone Co. of Rome, Ill., have shut down their plant for repairs and rebuilding. Hereafter this company will be known as the Joliet Crushed Stone Co. They will furnish crushed stone for highway and road work. George Garden is superintendent.

W. B. Curtis has finished his contract for the water extension of the Lockport water system, 10 miles of new pipe was laid with fire hydrants.

The Illinois Stone Co. of Lemont are working a full force of men in their quarry in order to fill all their orders of crushed stone before it freezes up, they have had one of the best seasons for many years.

The Chicago Ballast Co. are working their two Bucyrus shovels in their slag pits at the coke ovens at Joliet.

Chicago—Joe C. Hartwig who formerly was with the Wisconsin Slag Company at Mayville, Wis., has been working on a 65-ton Bucyrus shovel on the C. & N. W. Ry., four miles east of Niobrara, Nebraska. They have been eliminating crossings by cutting a road in the side of a hill. The material consisted of seamless chalk-clay. A dry clay and gumbo, which was used to raise the track which had been washed down by this year's heavy rains. In the 40 days work, Mr. Hartwig states they averaged 12 hours work with the machine per night, of this time they were loading but 4 hours on an average. However they got out 1500 25-yard cars. During this 40-day run all the delays, except one hour, were due to waiting for cars. This Mr. Hartwig considers a good record considering the fact that no repair work had been done on the shovel for five years. The work was done entirely at night with poor lights. L. Hecklinger operated the shovel, Joe C. Hartwig did the craning and Harry S. Hartwig the firing. Joe Hartwigs present address is 628 N. Avers Ave., Chicago.

Indiana

South Bend—The contract for constructing 7.8 miles of gravel road 14 feet wide has been awarded to H. W. Reed & Sons, Mishawaka, Ind., at $54,350.

Plymouth—The contract for constructing 3 miles of gravel road has been awarded to Frank Bellinger, Donaldson, Ind. Thid road will be 9 feet wide.

Iowa

Loveland—Timothy Ryan has been awarded 15,000 cubic

yards of road work on the Lincoln Highway between Bell City and Dunlap, Iowa, and will move his outfit from Dunlap on this work at once.

Hornick—P. Murphy has been awarded 200,000 cubic yards of ditch work here, on which he is working two dragline excavators.

Buck Grove—W. E. Shipman was awarded about 70,000 cubic yards of county road work near Buck Grove, Crawford County, Iowa. This work will start next May or June.

Kansas

Pittsburg and Vicinity

By. W. S. Russell

The cool weather is causing a good demand for coal. The steam shovels are all busy turning over the earth and enabling the stripping firms to fill their orders. Eleven of them are working double shift, which shows a prosperous condition of this method of producing coal. The market continues to improve and we quote prices as follows: Lump per ton, $2.25; Nut per ton, $2.00; Mine run per ton, $2.00; Mill run per ton, $1.75; Slack per ton, $1.35 F. O. B. railroad cars at the mines.

There are 40 steam shovels of the revolving type now stripping coal in the Kansas field having a production of nearly two million tons of coal per year, which is two-sevenths of the entire output for the district. The balance of five million tons being produced by the underground mines.

The Roy-Millner Coal Mining Company have bought out the lease and plant of the C. H. Markham Coal Company at Curranville. Mr. L. Roy will have personal charge of field operations.

The Carney-Cherokee Coal Company are operating a 225-B Bucyrus steam shovel, 2½ miles north of Mulberry on the Kansas City Southern Railroad. This monster shovel weighing over 300 tons is breaking all records in stripping coal, having dug from 4500 to 5000 cubic yards of earth and shale, overburden per day which uncovers from 500 to 600 tons of coal per day. Warren Little is engineer and Charles Walthour cranesman, R. J. Lawrence is general manager at Pittsburg.

The Pierce Coal Company are stripping with a model-251 Marion three miles north of Mulberry, a field of 160 acres on the K. C. S. Railroad. A. C. Munch is engineer and Otto Haller, cranesman on the day shift with R. E. Baitner, engineer and Jerry Thomas, cranesman on the night shift. Frank W. Pierce is general manager.

The Moka Coal Company of Pittsbug are operating two Bucyrus steam shovels stripping a field of 290 acres a mile and a half south of Mulberry on the Frisco railroad. The 150-B shovel is running double shift. F. L. Phelps is engineer and John Stultz, cranesman on the day shift, with Louis Flickinger, engineer and Ben Hope, cranesman on the night shift. The 175-B shovel has Elmer Keeney, engineer and James Smith, cranesman. Lee Bigby is superintendent in charge of field operations.

The Roy-Millner Coal Company at Weir City have a 150-B Bucyrus steam shovel stripping a field of 150 acres near Curranville on the Kansas City Southern Railroad. Fred Gebhart is engineer and Elmer Davis, cranesman. L. Roy is manager of field operations. This shovel has been in steady operation for three and one-half years and is doing as good work as ever.

The Clemens Coal Company of Pittsbug are operating a 175-B Bucyrus steam shovel on a 300-acre field near Minden, Missouri. Ed. Flaherty is engineer and A. Kirkwood, cranesman. Gabe Strangland is superintendent of field operations. Their general office is in the Globe Building.

The Pittsburg & Midway Coal Mining Company are operating a 225-B Bucyrus steam shovel carrying a 7-yard dipper, about two miles southwest of Minden on a field of 400 acres. Charles C. Miller is engineer and John Flynn, cranesman. William Morgan is superintendent. The offices of the company are in the Globe Building, Pittsburg.

The Nesch Coal Company are operating two steam shovels on a field of 190 acres just north of Frontenac, stripping coal for the Santa Fe railroad. Their 175-B Bucyrus steam shovel is running double shift. F. A. King is engineer and W. O. Garrison, cranesman on the day shift, with James B. Nitchman, engineer, and T. G. Hertwick, cranesman on the night shift. On their model-250 Marion shovel, C. E. Richmond is engineer and J. C. Steele, cranesman. A. A. Hammel, is general superintendent in charge of field operations.

The Clemens Coal Company have a 150-B Bucyrus steam shovel stripping a field of coal at North Pittsburg. J. M. Jones is engineeer and John Rhodes, cranesman. John Cunningam is superintendent.

The Canal Fuel Company of Pittsburg are operating a 175-B Bucyrus steam shovel at Chicopee four miles south of Pittsburg, stripping a field of 160 acres. Their tipple is located on the Santa Fe Railroad. The shovel is running double turn. John Hennesey is engineer and Arthur Glover, cranesman on the day shift with Charles Oberg, engineer and A. B. Colson, cranesman on the night shift. John Thomas is superintendent.

Smith, Scott & White, contractors of Pittsburg, are stripping a field of 260 acres two miles west of Chicopee for the Central Coal & Coke Company with three 175-B Bucyrus steam shovels. On their No. 8 Charles Pinkerton is engineer, and Louis Bourlard, cranesman. On No. 9, J. H. Ward is engineer and Charles Ebbs, cranesman. On No. 10, Burt Williamson is engineer and Allen Pinkerton, cranesman. George Wickware is superintendent.

The J. R. Crowe Coal & Mining Company have a 225-B Bucyrus steam shovel carrying a 6-yard dipper, stripping a coal field about a mile south of Scammon. Wm. Bartino is engineer and A. Malle, cranesman. James Reed is superintendent.

The Roy-Millner Coal Company is stripping coal on a field a mile and half south of Weir City with a 150-B Bucyrus steam shovel. A. W. Thompson is engineer, and J. T. Lockhead, cranesman. John Sanders is superintendent.

The Pittsburg-Scammon Coal Company are operating two Bucyrus steam shovels on a field about a mile south of Scammon. On their 150-B shovel I. G. Martin is engineer and Mike Flaherty, cranesman. On their 175-B shovel, W. J. Donovan is engineer and Mike Kelly, cranesman. Harry Miller is manager of field operations.

The Skidmore-Patterson Coal Company have a 95-ton Vulcan steam shovel stripping a field about a mile south of Scammon on the Frisco railroad. They are running double shift. Ed. Lucas is engineer and James Davis, cranesman on the day shift with L. L. Munson, engineer and James Sharpe, cranesman on the night shift. This shovel is the first to be installed stripping coal in the Kansas field nearly five years ago and is still doing good work.

The Southern Kansas Coal Company of Weir City are working a 95-ton Vulcan steam shovel about a mile south of Scammon. Charles Arnold is engineer and Vernon Watkins cranesman. Harry Jenkins is superintendent of operations.

The Fleming Coal Company are operating a 175-B Bucyrus steam shovel stripping a field of 130 acres near Skidmore, Kansas. George W. Jones is engineer and Albert LaRue, cranesman. Alex Wallace is superintendent.

Louisiana

Notes from New Orleans

By the Byrons

Burt Bond & McMurray, of Beulah, Miss. was the low bidder on 165,000 yards of levee work at Clarksdale, Miss. on November 5th.

Roach & Stansell, Memphis, Tenn., was the lowest bidder on 95,000 yards of levee work at Memphis, Tenn. on November 6th.

Geo. F. Ramsey reports fine progress on his work. George has a 40-C Bucyrus shovel loading Western wagons on levee work near Clarkedale, Ark. for the St. Francis Levee.

F. T. Constant of Alexandria, La. says he has 500,000 yards of good work on the Red River, and would like to sub some of this. Dragline and team men wanting work should write Mr. Constant.

R. T. Clark has moved an outfit on the Cross Levee in Arkansas. This is part of the Arkansas extension.

Work on the G. F. & A. is progressing nicely. J. T. McCarthy & Co. has the contract.

The fine weather is causing the river contractors a great deal of pleasure and they are carrying their work on with a rush.

Yale & Reagan report that they are getting along nicely with their car work near Marion, Arkansas.

Work on the filling of the bridge approach at West Memphis, Arkansas, is progressing nicely. Ball & Peters have the contract.

Reports are that the L. & N. Railway are going to change their route into New Orleans and it is hoped that this will mean more construction work for the contractors.

C. S. Miller, manager of the Memphis branch of the Western Wheeled Scraper Co. advises that he is very much encouraged with prospects of a good business in his line in the near future. Of course Mr. Miller is always optimistic on that subject as he is always out getting the business.

Any one wishing information regarding open pit coal mining in the Alabama coal field will do well by addressing E. L. Byron Morris Hotel, Birmingham, Ala. or 1105 Hennen Bldg., New Orelans, La. Mr. Byron will be glad to give you complete details.

This office has had a number of calls for dragline operators lately and any dragline operators out of employment are asked to file their name and address with this office at once.

This office has a list of names of all classes of excavating machinery operators that can be recommended very highly. We will be glad to serve our contractor friends.

Geo. Williams erecting engineer for the Bucyrus Co. has about completed the installation of a 150-B coal stripping shovel for the C. G. Kershaw Contracting Co. at Carbon Hill, Ala.

The C. G. Kershaw Contracting Co. of Birmingham advise that they will be moving dirt with their new 150-B Bucyrus coal stripping shovel by December 1st on their contract at Carbon Hill, Ala. with the Bonnyman-Norman Coal Co.

The Bonnyman-Norman Coal Co. advise that they will install a small revolving steam shovel in thirty days to load coal with on their property at Carbon Hill, Ala.

They have about a 38-inch vein of coal and it is intended that this shovel shall follow behind the 150-B Bucyrus coal stripping shovel and take out the coal. The coal stripping proposition by steam shovel is a new method in the Alabama field but loading coal by steam shovel is the latest method to be tried in this field.

D. B. Hearin & Son report that they are getting along very nicely with their levee work below the city where they are using one of their gravity machines and their class-24 Bucyrus dragline. Mr. Uubre and Mr. Hahn are operating the class-24 machine.

Minnesota

News from the Twin Cities

By Clapp, Norstrum & Riley, St. Paul

A. Guthrie & Company of this city were recently awarded contract of section 14 on the Calumet Drainage Canal at Blue Island, Ill., and are already shipping outfit with which to cover the work. The above firm was also awarded, the other day a $100,000.00 reservoir contract by the Great Northern, near Minot, N. D., and are shipping their class-14 Bucyrus dragline from Portland for this work.

This office, the other day had a cablegram from W. F. Carey, stating that he had attended the coronation of the emperor of Japan as special representative of the Emerald Isle. At the time the cablegram was sent they had just arrived at Shanghai, China.

Chester Siems, who has recently been under the weather and confined to his home for a couple of weeks is now at his office again and looks fine.

Mississippi

Silver City—The W. P. Bullock Co. of Kansas City, Mo., has 407,000 cubic yards of excavation and C. B. Box, Midnight, Miss., has 90,000 cubic yards of levee work in the Atchafalaya drainage district.

Missouri

Cape Girardeau—Louis Augustine is operating a class 175-B Bucyrus dragline for the Floesch Construction Company, here.

Cape Girartdeau—Wm. H. Everding, who for the last five years has been moving dirt for the Natomas Consolidated on their reclamation project in California, is now with the Floesch Construction Company, here.

Kansas City—The contract for constructing 4½ miles of road has been awarded to H. H. Hanenkratt, Paseo, Kansas, 53rd and Brooklyn, at $278,882.15. This will be 220 feet wide and include 337,900 cubic yards earth grading, 31,900 square yards rock and bridge to cost $60,000.

Kansas City—The List & Gifford Construction Company received the contract from the Kansas City Southern Railroad for widening and deepening ditches on their entire line, also 60 miles of bank widening. They are placing a steam shovel at Joplin, Mo., on this line, taking out a cut north of the town. They expect to finish the track laying at Garden City, Kansas, by the 20th of November.

St. Louis and Vicinity

By A. C. Esser

F. A. Grant has purchased 20 1½-yard Western side dump cars with 24 inch gauge, for his work at University City. These cars are to be loaded by his 14-B Bucyrus shovel, which is operated by F. J. Tungate, whose daily output averages about 700 cubic yards. His reason for utilizing these cars is that he has struck considerable rock, which is unsuual on property grading and his shovel is handling this material with very li'tle blasting.

John Keeley reported that with his new 85-C Bucyrus shovel with a 4-yard dipper, which is so ably manipulated by his operator, Ted Cook, he is making a record time of four minutes

to the car in loading; and that despite the fact that these Western cars are of 30 yards capacity water measure, the nature of the material is such and the cars are loaded with such mechanical dexterity, that they invariably average 40 yards to the car, enabling him to clear out of 120 cars per day, a total yardage of 4,800 cubic yards in a ten hour shift.

F. C. Miller & Co., and Thos. Hogan of this city who were recently awarded the contract for the reinforced concrete viaduct over the Frisco & Missouri Pacific Railroad tracks at Chouteau Ave., have commenced work and are pushing it with vigor. They have recently purchased a new equipment of mixers, hoists and towers, and are moving rapidly.

Keating Bros. of Taylorville, Ill. have secured tye contract from the Wabash Railroad for grading a yard at Mt. Olive, Ill. and are now moving their outfit on that work.

E. L. Lawson of 2106 East Cook St., Springfield, Ill, who is a steam shovel operator, has advised that he is now open for a position in this line.

Montana

Malta—The contract for building structures on Nelson Reservoir, Milk River irrigation project, has been awarded to Jurgens, Booth & Co., Glasgow, for $34,081.50. Work included 25,000 cubic yard of excavation, 1,700 cubic yards concrete, placing of 115,000 pound reinforcement, erection of 450 feet of metal flume, and placing in structures of 85,000 feet B. M. lumber.

Following contracts have been awarded for earthwork and structures on Bowdoin Canal, Milk River Irrigation Project; schedules 1 and 2, involving 133,410 cubic yards excavation and 9,000 cubic yards overhaul, to James O'Connor, Saco, for $18,-618.50; schedules 3 and 4, involving 81,000 cubic yards excavation, 450 cubic yards reinforced concrete, 429 square yards dry paving, 30,000 pound steel reinforcement, and placing 12,000 feet B. M. lumber to Jurgens, Booth & Co., Glasgow.

Malta—Russell Condon of Condon Bros., expects to complete his contract this month.

Great Falls—A contract has been awarded Wilson Bros., Polson, Mont., at $16,423.50 for constructing Mission Lateral H and sub-laterals, Flathead Irrigation Project. This will include about 10 miles laterals and appurtenant structures embracing 43,000 cubic yards excavation; 140 cubic yards concrete; 430 square yards paving, placing 9,800 pounds steel and about 32,000 feet of B. M. lumber.

Nebraska

Tekamah—The J. L. Mullen Company of Lincoln, Neb., is installing draglines on its 750,000 cubic yards of work for the Drainage District of Burt and Washington Counties. They have unloaded one of their machines at Tekamah, getting ready to start operations, and another machine at Herman.

Omaha—S. B. Doyle has finished several contracts on his Union Pacific work and has gone into winter quarters.

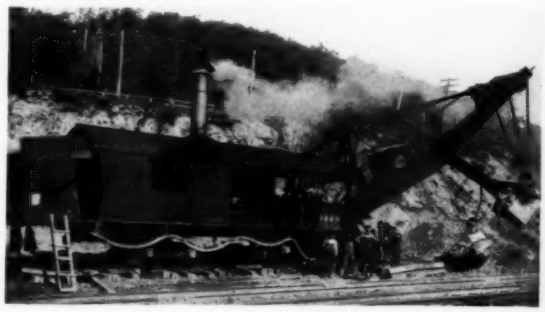
Omaha—G. W. Condon has been awarded 25,000 cubic yards of grading by the Metropolitan Water Board of Omaha. Mr. Condon has sublet this work to John Sullivan, who will start work at once.

Omaha—The W. E. Callahan Construction Company has two dragline outfits working on 500,000 cubic yards of ditch work two miles east of Tekamah, Neb.

Omaha—Turner & Jamison have two machine outfits working on street grading work in Omaha and a Bucyrus 18-B shovel on county road work near Florence, Neb.

New York

Vandalia—The photograph published here shows the Erie Railroad shovel number 03468, a Bucyrus 65-ton, which is digging slate rock on double-track work near here. This shovel is run by F. A. Crabb, with Samuel Lynch as cranesman and J. J. O'Donnell, fireman. Mr. Crabb states that the shovel is ripping out the slate rock in good shape.



New York and Vicinity

By H. Grey

H. Wolfman dropped in our office on November 10th from Mitchell & Johnston's job at Wiscasset, Maine, where he was operating a 45-ton Bucyrus shovel on the Maine Central Railroad work, which consisted of single tracking from Bath to Rockland, Maine.

George Ferris was fireman and Phil. Mar, cranesman.

Mitchell & Johnston also used on this job, a 70-C Bucyrus shovel which was operated by Jim Shea. The excavation was principally rock.

The 45-ton shovel averaged about 540 yards a day and the 70-C averaged about 1680 yards a day.

Oklahoma

Arbuckle—The contract for constructing 176 miles of line for the Southern Light, Power & Railway Co., has been awarded to Arbuckle Construction & Improvement Co., Arbuckle, Okla.

Oregon

Portland and Vicinity

By L. T. Russell

Collier & Stevenson and Montague-O'Reilly were joint bidders on the Puget Island dyking job and succeeded in landing it at a total price of about $98,000.00.

W. W. Johnson of the Union Construction Company, San Francisco, Cal. just returned from Nome, Alaska. The writer acknowledges a very pleasant visit with him.

The various road contracts in Oregon and Washington are practically tied up for the winter owing to weather conditions.

Frank Manley of Manley & Price, report a very successful season with their class-14 dragline on their placer claims near Iditarod, Alaska and hope to better next season since all their equipment is now on the ground and they should have better than 100 days in which to work while they had only 31 actual days work at sluicing the present season, yet at that they seem well pleased with results.

UMI

R. E. Strahom and associates of Portland, Oregon, have planned the construction of about 400 miles of railroad in eastern and southern Oregon.

A large number of miners have returned from Alaska in the last three weeks and the greater part are now gone or going to their homes at various points on the Pacific Coast and in the Eastern States.

Work on the Interstate bridge is progressing in a satisfactory manner, and the intention is to have it completed late next fall.

Business generally is looking up somewhat throughout the northwest, here's hoping it continues to do so.

J. M. Ambrose, Bates Dock Bldg., Portland, Oregon, was the successful bidder on the Stevenson-Carson highway in Skamania Co., Washington, at $48,000.00.

Enterprise—Contract has been awarded James Kennedy, Portland, Ore., at $18,652.60 for constructing lateral sewers. Will include 25,600 feet of pipe.

Portland—Contract for constructing new trunk sewer outfall at end of Hall and Water streets has been awarded to J. P. O'Neill at $15,185.

Grandview—At a cost of about $533,390, it is proposed to construct in Suttles Lake Irrigation District feed canal from First creek to Suttle Lake, 3½ miles, and construct dam 58 feet in height, also main canal 18 miles long from Suttle Lake to irrigable lands. O. Laurgaard, 410 Railway Exchange, Portland, Ore., is consulting engineer.

Marshfield—It is being planned by residents of Ten-Mile District to have plans prepared by E. L. Robinson, engineer, for drainage district to serve that section. Cost, about $15,000.

North Carolina

Montezuma—H. C. McCrary, of Knoxville, Tenn., has been awarded contract for the extension of the Linville River Railway from Montezuma to Shulls Mills, N. C., 14 miles.

Pennsylvania

Philadelphia—Bids were received by the U. S. Government on November 22nd for the deepening of the Delaware River from 27 to 32 miles below Chestnut St., Philadelphia. The work will be divided into three sections which will call for respectively 800,000 cubic yards, 1,360,000 cubic yards and 1,420,000 cubic yards scow measurement. This does not include the allowable overdepth dredging which will be approximately 200,000, 350,000, and 250,000 cubic yards respectively for the three sections. The material is believed to be soft and firm mud with a mixture of sand and some stiff clay, cobbles and gravel. The material will probably be disposed of by being dumped from the scows into rehandling basins from which it will be pumped ashore above high tide by hydraulic dredges.

Wilkes-Barre—On November the 6th, the Nicholson cut-off on the Delaware, Lackawanna & Western Railroad between Clarke's Summit, Hallstead, was opened. This is one of the largest railroad construction projects that has been in progress for the last year or so. The cut-off saves 3 6-10 miles between Clarke's Summit and Hallstead. It reduces the grade between these places from a maximum of 1.3% to .68%, and the total curvature, from 3,970 degrees to 1,570 degrees. The work was divided into ten sections, the contractors for which were as follows:—Section 1, Robt. Grace; Section 2 and 3, Reiter, Curtis & Hill; Section 4, D. W. Flickwir; Part of Section 5, Flickwir and Bush; Part of Section 5 and 6, Waltz & Reece; Part of Section 6, James A. Hart; Section 7, Timothy Burke; Section 8, F. M. Talbot; Section 9, P. McManus; Section 10, W. H. Gahagan.

The planning of this work and the general supervision of the work of construction, has been in the hands of G. J. Ray, chief engineer of the Delaware, Lackawanna & Western Railroad, F. L. Wheaton has been in immediate charge as engineer of construction.

Texas

Houston—The H. C. Gass Company have finished their San Antonio sewer job. and have moved their 18-B Bucyrus and outfit onto a 3000 foot 54 inch job here. They started digging about the 15th of November. S. M. Spooner the operator advises that this is a short job but hopes for something doing before the good old summer time.

Midland—The contract for grading from Midland, Texas, through Andrews County to Seminole, about 65 miles, has been awarded to J. A. Hunter, Strawn, Texas, by the Midland & Northwestern Railway Co.

Utah

Spanish Fork—Contract for extension of Orem Railroad has been awarded to Wasatch Construction Co., Provo.

Corinne—It is probable that new bids will be received later for work in Corinne drainage district, as all bids received October 23rd have been rejected. Will consist of 8 miles open ditch 6 feet wide at botton, 4½ feet deep and requiring 50,000 cubic yards excavation; also 235 miles tile drains from 4 to 16 inches. C. G. Adney, secretary.

Virginia

Norfolk—The Bureau of Yards and Docks, Navy Dept., Washington, D. C., opened bids on November 25th for approximately 700,000 cubic yards of dredging in the southern branch of the Elizabeth River.

Washington

Brewster—Negotiations are pending for the construction of the Brewster Irrigation District Project by the exchange of bonds for work, materials and equipment. This project is located in Okanogan County in north central Washington. $1,250,000 worth of bonds have already been voted and all transactions confirmed by the Superior Court. The project involves the construction of a main canal, 40 miles in length which will call for 500,000 cubic yards of excavation as well as considerable concrete work, etc. The lateral system includes approximately 200,000 cubic yards of excavation. O. Laurgaard, 410 Railway Exchange Bldg., Portland, Oregon is the consulting engineer.

Colville—Contract for grading 3½ miles road 16 feet wide has been awarded to Spokane Asphalt Macadam Paving Co., Spokane, Wash., at $10,000.

Tacoma—It is proposed by Pacific Traction Co., Geo. W. Rounds, general superintendent, Tacoma, to construct 2-mile extension on Steilacoom boulevard, Starling street and Steilacoom avenue, to Union and LaFayette. Will require 14,347 cubic yards earth excavation and 12,850 cubic yards embankment.

West Virginia

Chelyan—Patton & Lapsley expect to complete their contract for the Charleston Interurban Street Railway Company's new line from Winifrede Junction to Cabin Creek Junction by December 1st. The contract calls for the excavation of 100,000 cubic yards of material and the concrete work for three creek crossings.

Worthington—C. P. McCormick is master mechanic for A. L. Anderson & Bros., Inc. at this point.

Wyoming

Ft. Laramie—The contractors on the Ft. Laramie Project are gathering their forces. The Fred Crane Company of Omaha have 5 miles of canal which they will dig with a gasoline dredge with a 100-foot boom and a 2-yard dipper. G. L. Payne is in charge of the work and L. W. Allison, engineer. The Nolton Company has one mile of team work and is building a boarding house for their men. Winston Bros. are to use class-20 and class-24 Bucyrus dragline excavators and a grader. One dragline excavator is already on the job and the other is to be shipped from Chicago. They have 10 miles of canal which have to be finished by July 7th. This canal has a 45-foot bottom a a 2 to 1 slope, the longest cut being 52 feet. Tom Sheridan is in charge and F. A. Mengel is night superintendent with Ray Adams as engineer. W. Winston, Jr. will be in charge of the office.

PROSPECTIVE CONSTRUCTION

Arkansas

John A. Marsh, County Judge Searcy, will furnish further information regarding 15 miles of highway to be constructed between Searcy and Hickory Plain on Prairie County line.

Work on constructing 14 miles of road toward the zinc mines will be started within 60 days by the County Court, Marshall.

It has been stated by Joe Asher, County Judge Little Rock, that 22 miles of macadamized and gravel highway will be constructed in the next 12 months.

It is being contemplated by St. Louis, Iron Mountain & Southern Railroad Co. to construct a branch from Buffalo to Rush, Ark., about 6 miles.

Bids for the construction of about 44 miles of ditches requiring the excavation of about 1,800,000 cubic yards of earth, will be received by the Board of Commissioners of Drainage District No. 7, Crittenden County, Arkansas, at the Court House at Marion, Arkansas, on December 10th. Bonds will be sold on the same date, and the construction will be paid for in cash.

Plans and specifications may be secured from the Morgan Engineering Company, Memphis, Tennessee, who are engineers for the district.

California

The Board of Supervisors Los Angeles has appropriated $325,000 for the construction of 20 feet of concrete highway, 30 miles long from Saugus via Mint Canyon to Palmdale.

The Southern Pacific is reported to have taken over the Butte County Railroad, and will extend it to Westwood to connect with Fernley & Lassen Railroad.

M. M. O'Shaughnessy, city engineer, San Francisco, received bids November 24th, for constructing a railroad from Rosasco to Hetch Hetchy dam site, for transporting materials for construction work. This will be about 68 miles long and cost about $1,700,000. Grading will average about 16,000 cubic yards per mile.

Bids will be received by the state highway commission, 515 Forum Bldg., Sacramento, until 2 P. M. December 6, for the construction of about 12 miles of concrete paved highway in Imperial County, between Dixieland and El Centro. Plans, profiles and specifications may be seen at the division offices at Los Angeles but may be obtained only from the Sacramento office on payment of cost of blue prints. The work will involve between 40,000 and 50,000 cubic yards excavation and between 10,000 and 17,500 cubic yards concrete paving, corrugated iron and reinforced concrete culverts.

Canada

Application is being made to the Dominion parliament for an extension of time, it is said, to build the projected line from the Canadian Pacific, near Farnham, Que., north to Granby, thence northeasterly to Windsor Mills or to Richmond, about 60 miles. Pringle, Thompson, Burgess & Cote, Ottawa, Ont., are solicitors for applicants.

According to press reports, surveys are now being made by the Intercolonial from Painsec, N. B., through Baie Verte, Tidnish and Pugwash, thence to Truro, N. S., for a revised location for portions of the line. The surveys between Truro and the Nova Scotia-New Brunswick boundary are about finished and survey work on the section in New Brunswick will be finished in December.

It is reported that the National Transcontinental will build about three miles of line to the proposed site of a large pulp mill to be built at Neelands, Ont., which is 30 miles west of Cochrane.

The Provincial Government of New Brunswick has taken over the charter of the St. John & Quebec Railway, and after an adjustment and settlement of outstanding claims arising out of the construction of the 120 miles between Gagetown, N. B., and Centreville have been arranged, will complete the construction of the line. The company was organized to build from Grand Falls, N. B., southeast following the St. John River to St. John, about 210 miles. The sections yet to be built are from Centreville north to Grand Falls and from Gagetown south to St. John. The section from Frederickton to Centreville, 88 miles, is now being operated by the Canadian Government Railways.

Colorado

It is being contemplated by the Denver & Rio Grande Railroad Co., Denver, Colo., to spend $10,000,000 in Colorado for constructing improvements.

Connecticut

It is being planned by the New York, New Haven & Hartford Railroad Co., Elmer Gagel, New Have, Conn., chief engineer, to double-track its Northampton division to complete stretch of double tracks between New Haven and Westfield.

Florida

It is being contemplated by the Atlantic Coast Line Railroad Co., E. B. Pleasants, Wilmington, N. C., chief engineer, to construct a line from Sebring to Immokalee, via Ft. Thompson, a distance of about 80 miles.

They are using one Bucyrus 70-C shovel, thirty 4-yard Western dump cars, two 12-ton Porter, two 14-ton Baldwin and one 12-ton Davenport locomotives.

Illinois

Surveyors for the Illinois Central are surveying for a cut-off starting at Creal Springs, Ill., which is intended to eliminate the high grade at Ozark Hill. A short tunnel will pass under the range of hills in the neighborhood of McCormick, Pope County. The route will result in the road's diverting many trains that now go over the bridge at Cairo to the new bridge at Metropolis.

Indiana

It is being planned by the Evansville, Chrisney & Eastern Railway Co., J. P. Chrisney, president, Evansville, Ind., to construct a line from Boonville to Chrisney, about 13 miles, and from Boonville to Lynnville, about 11 miles.

Kansas

Citizens of Kinsley, Kansas, and five townships between here and Trousdale have voted $252,000 of bonds to aid in the construction of the Anthony & Northern Railroad extension from Trousdale to Kinsley. O. P. Byers, Hutchinson, Kansas, is president.

Kansas City, Mexico & Orient Railroad Co. has applied to the State Public Utilities Commission for permission to issue $51,238,000 in stocks and bonds. It is stated that part of the proceeds will be used for immediate construction of the road from Wichita to Kansas City.

Kentucky

The county clerk London, will receive bids soon for constructing 14 miles of the Dixie Highway from Boone Way, between London and Corbin in Laurel County.

A line will be built by Southern Railroad through coal and timber districts in Bluefield, W. Va., and along the border of Kentucky and Virginia, about 65 miles.

Louisiana

It is being contemplated by the Arcadia Parish police jury to construct 150 miles of gravel roads. Plans provide for two 18-foot roads extending north and south and two roads extending east and west. The work will cost about $750,000.

Mississippi

Surveys are now being made by X. A. Kramer, Magnolia, Miss., for an interurban electric line to be built from Summit, Miss., south via McComb and Fernwood to Magnolia, about 12 miles. G. M. Walker, New York, is said to be interested. The McComb & Magnolia Railway & Light Company is said to have been incorporated recently with a capital of $500,000 by M. R. Walker, S. M. Jones and others.

Ohio

The Cincinnati, Hamilton & Dayton Railway Co., will doube-track its line from South Dayton to Miamisburg, a distance of about 7 miles. The cost will be about $175,000.

Oregon

A railway will be built about 400 miles in length from Bend to Klamath Falls, via Silver Lake, from Silver Lake to Lake View and from Ben to connection with Oregon-Washington Railway & Navigation Co. Robert E. Strahorn, Portland, Ore., is interested in company to build this road.

Roadmaster John B. Yeon Portland, has reported in favor of the expenditure of $588,000 for the improvement and maintenance of Multnomah County roads; $231,000 of this is for new work.

Tennessee

The County road commission, S. S. Levan, chairman, Winchester, will let contracts on or about December 1st for 170 miles of 10-foot macadam or gravel roads.

Texas

Construction work is to be resumed, it is said, on the first section of about 100 miles of the Altus, Roswell & Pacific Railway between Memphis, Tex., and Lubbock. This line was projected in 1911. The plans call for building an extension from Lubbock west to Roswell, N. M., also an extension east to Altus, Okla. T. C. Nobles, Houston and associates are back of the project.

Utah

It is being contemplated by Union Pacific Railway to construct 75 miles of line, next year, southeast from Park City to Uinta Valley.

Virginia

The Richmond, Rappahannock & Northern Railroad is reported to have secured all right-of-way and is understood to be planning to start construction in the near future on its proposed line from West Point to Urbana. Chas. L. Ruffin, American National Bank Bldg., Richmond, Va., is chief engineer.

TRADE NOTES

The Campbell Motor Co. of Minneapolis, Minn. has been reorganized and is now making a vigorous campaign for a greatly enlarged business. The ownership is entirely changed. Mr. Wm. Kennison, who is the principal stockholder, has thoroughly rejuvenated this business and is giving his entire efforts to making this one of the important engine building plants of the country. He has entirely reorganized the factory, selling force and finances of the company, and has brought back Mr. Wm. Campbell, the designer of the Campbell Motor, and placed him in charge of production.

Mr. Frank G. Bolles, long with the Bullock Electric Co., of Cincinnati and the Evinrude Motor Co., of Milwaukee, has been placed in charge of the sales department. A vigorous policy has been outlined and it is certain that the Campbell Motor will be heard from most emphatically.

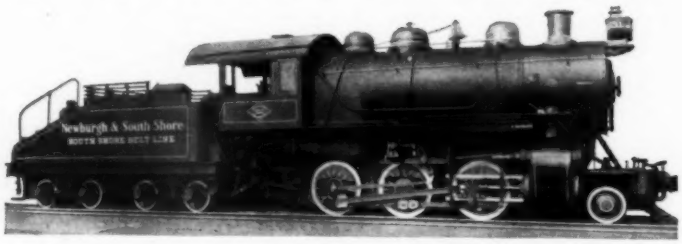
It is said that the Campbell Motor is known from coast to coast for its rugged, substantial qualities, and it enjoys a wide popularity where certainty of operation, complete dependability is required. We understand it is sold extensively in South America as well as in the States. The line includes motors from 5 to 125 H. P.

Don't Look at this!

Miss Curves sued an old man from Drury;
And she made an appeal to the jury;
She said that one limb
Had been injured by himb,
But the jurymen were from Missouri.

—*Exchange.*

BALDWIN



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The Mogul Locomotive illustrated is used in heavy switching and freight service on rails weighing 90 pounds per yard. It is hauling hot metal ladles up grades of 52 and 60 feet per mile, and around curves of 25 degrees. This locomotive exerts a tractive force of 40500 pounds, and weighs, with tender, approximately 145 tons. It is equipped with superheater, brick arch, and Walschaerts valve motion.

Locomotives of the Mogul type can be adapted to heavy contractors' work and other classes of special service.

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A. WM. HINGER, 722 Spalding Building, PORTLAND, OREGON

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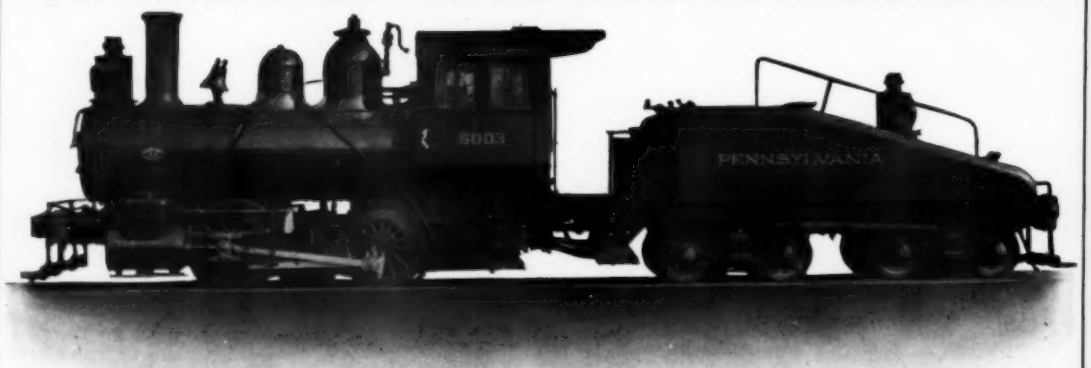

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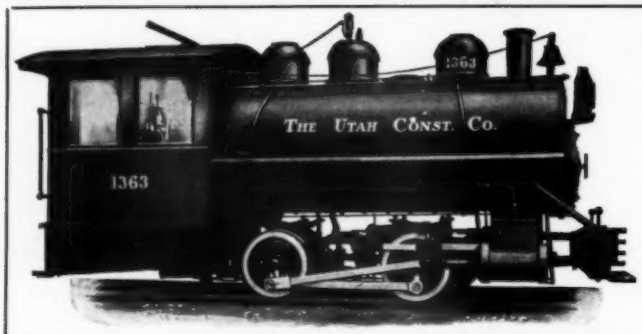

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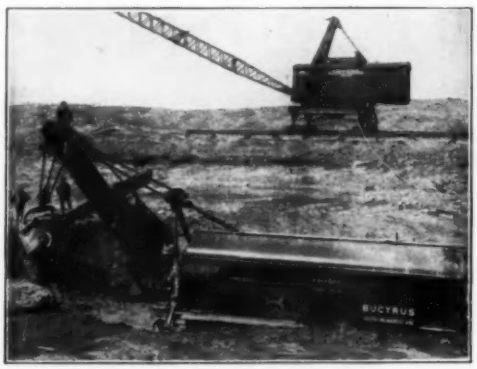

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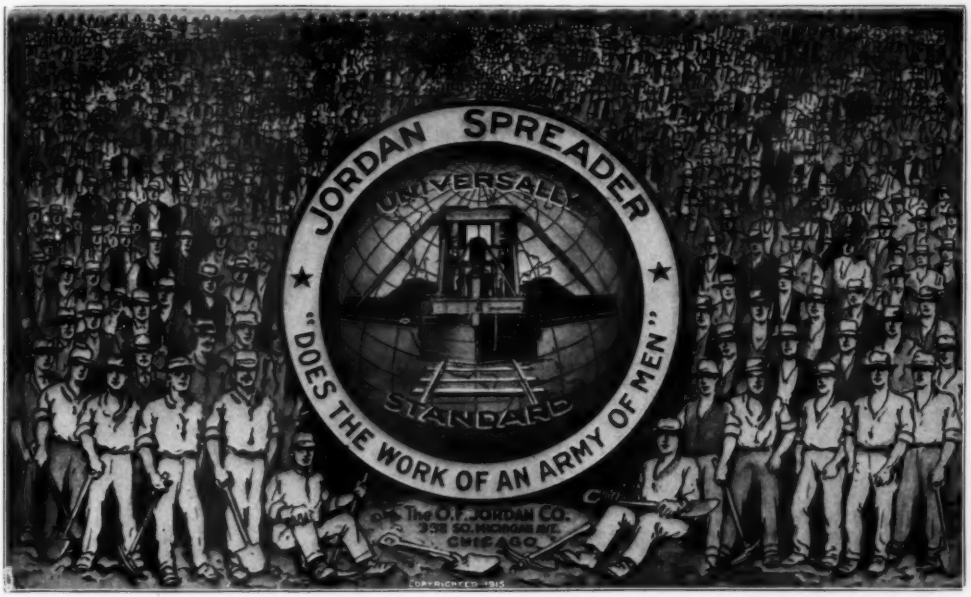

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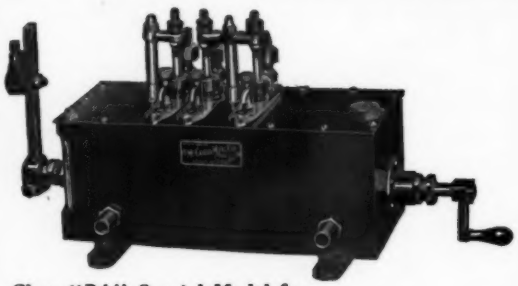

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